

FM 6-140
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FM 6-140

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FIELD MANUAL

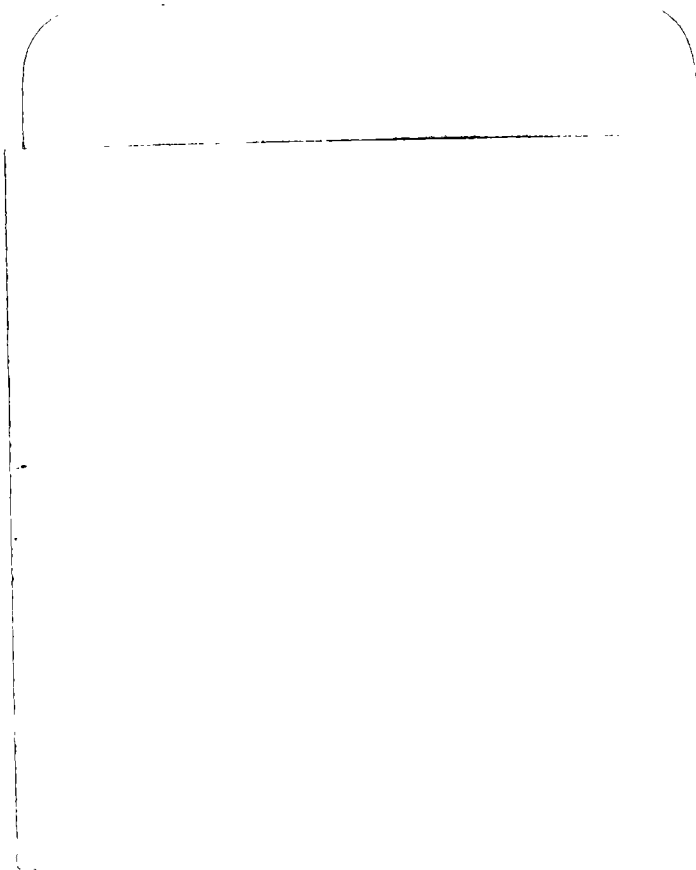
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FIELD ARTILLERY ORGANIZATIONS

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ROOM 1 A 518 PENTAGON

HEADQUARTERS, DEPARTMENT OF THE ARMY
APRIL 1973



Change

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D C., 10 December 1976

FIELD ARTILLERY ORGANIZATIONS

FM 6-140, 30 April 1973, is changed as follows:

1. Using pen and ink, make the following corrections:

PAGE	PARAGRAPH	REMARKS
1-1	1-1a	In line 3, change "rocket, or aerial field artillery" to read " <u>or rocket battalion</u> ". In line 10, change "rocket and aerial battalions and batteries" to read " <u>and rocket battalions which will assist . . .</u> "
	1-1b	In line 6, change, "missile, rocket and aerial units" to read " <u>missile and rocket units</u> ".
	1-1h	In lines 2-3, <u>delete</u> " . . . the aerial field artillery battalion and batteries . . . "; in line 5, change "battalion and batteries" to read "element"; in line 7, delete "other than cannon, missile or rocket."
	1-1h(1)	Delete
	1-1h(2)&(3)	Change to read "1-1h(1) and (2)".
	1-1h	Add "1-1h(3) FM 6-50 Field Artillery Cannon Battery."
	1-2a	In line 10, add: "ATTN: ATSF-TD-TM."
1-2	1-4	In lines 7-10, delete "The firing unit . . . is the aerial field artillery battery."
	1-6	In line 14, change "a Field Army" to read " <u>an Army component of the unified command</u> ".
	1-7a	In line 2, change "Force" to read "Corps"; in line 5, change "rockets, guided missiles, or aerial weapons . . ." to read "rockets or guided missiles . . ."; in line 8, after "neutralizing " add <u>supressing</u> ".
1-3	1-7b(2)	Delete last sentence of subparagraph.
	1-7b(5)	In line 3, change "Field Army" to read "Army-in-the-Field".
1-4	1-7b(9)	In line 8, change " . . . with six tubes . . ." to read " . . . with four or six tubes . . ."
1-4	1-7b(10)	In line 4, change " . . . Forward to . . ." to read " . . . forward and in depth . . ."
1-4, 1-5	1-7b(11)(c)	Delete complete subparagraph.
2-2	2-2a(1)	In line 1, change "personal" to read "personnel."
2-3	2-6a(7)	Delete
	2-6a(8)	Renumber as "(7)"; change "counterbattery status." to read "counterfire (CF) status/criteria."
2-4	2-6n	After "measures", add "(when applicable)"
2-5	2-10c	Delete all after "(CEOI)".

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C1, FM 6—140

PAGE	PARAGRAPH	REMARKS
2—7	2—18 ✓	Change title to read "Command Sergeant Major"; in line 1, change "sergeant major" to read "command sergeant major".
3—6	Sect II ✓ 3—4 thru 3—7	After title, add "(see FM 6—50)."; delete paragraphs.
3—7	3—8b	In lines 5 and 6, delete, "(when published.)"
3—7	3—10b(2)(4) ✓	In last sentence, delete "Field Army and Corps."
3—8	3—16a	In line 10, delete "Field Army."
3—12	3—22c	In line 7, delete, "FM 9—6."
3—12	3—24	Delete
3—12	Sect V	In title, delete "The Army Artillery Section" and "of corps".
3—13	Figure 3—6, 3—7	Delete
3—17	3—29d	Delete "and FM 61-24 (Part three)."
4—1	4—1b	Change last sentence to read "For additional information on RSOP for the cannon battery, see FM 6—50."
4—2	4—6b	In line 3, following "radar position," add "(when under battalion control)".
	4—7a	In Reconnaissance or Task column, after "selects countermortar radar site." add, "(when applicable)".
4—5	4—12	In lines 6—7, delete "and aerial artillery (if available)".
4—5	4—12	In line 31, change "(FPR)" to read "(FPF)."
4—9	4—16a	In line 1, change, "The field artillery commander designates . . ." to read "When applicable, the field artillery commander designates . . ."
6—1	6—1b(2) 6—1b(3)-(8) 6—2	Delete sentence. Renummer "(2)-(7)" respectively. In line 1, delete "or battery . . ."
6—2	6—2 6—3	Delete last two sentences of paragraph. Delete second sentence; change third sentence to read "the first sergeant, working with the executive officer, assists the battery commander . . ."
	6—3a	In line 4 and 5, delete " . . . the security officer, assisted by . . ."; in line 5, delete the comma following "Sergeant."
6—11	6—32a	In line 4, delete "The redeye weapon system is not . . . air defense system."
6—13	6—33c(2)	In line 7, delete "in FM 23—12 and FM 23—65;" add "TC 23—44."
7—1	7—2	In line 13, add "and TC 6-10-1."
7—2	7—4d	In line 5, delete "FM 61—24."
7—3	7—7	Delete "FM 61-24."
8—1	8—1a 8—1g	In line 10, add "(See FM 6—20)." In line 5, add "and FM 6-40-5."

PAGE	PARAGRAPH	REMARKS
8-9	8-17a(10) <i>FM</i>	In line 2, change "no-fire lines (NFL), Fire Coordination Line (FCL)" to read "Coordinated Fire Line (CFL), Restrictive Fire Line (RFL)."
8-10	8-18a(2) ✓	In line 3, change "annex" to read "plan."
	8-18a(6) ✓	In line 2, change "no fire line" to read "coordinated fire line."
	8-18b(3) <i>sub FM</i>	In line 9, change "field artillery fire support appendix," to read "field artillery support plan."
8-11	8-22 ✓	Delete paragraph.
9-1	9-1c(1) ✓	In line 1, after "55-30" add, "6-50."
9-2	9-5e ✓	Delete "the cannon firing battery . . . the march and orderly occupation of the position area." Add as the last sentence of the subparagraph, "For cannon firing battery march formation, see FM 6-50."
9-2	9-5g ✓	In line 8, change "cannon," to read "launchers."
9-3	9-6 ✓	In line 4, after "following" add "(See FM 6-50)."
9-5	9-17 <i>see FM</i>	In line 5, change, "individual protection" to read "mutual support."
	9-19 ✓	In line 10, change "prearranged codes" to read "CEOI."
9-6	9-20c ✓	In line 2, change "SOI, SSI" to read "CEOI."
9-7	9-26 ✓	In line 1, change "battery" to read "unit."
	9-28 ✓	In line 6, delete "direct or . . ."
	9-29a ✓	In line 4, change "commander" to read "commander/executive officer".
	9-29c <i>FM</i>	In line 5, delete sentences, "Direct fire should . . . reduce the obstruction by direct fire."
9-8	9-29d ✓	In line 3, change "commander" to "commander/executive officer."
9-8	9-30 ✓	In line 5, delete sentence "direct fire from . . . tanks and infantry."
9-10		At bottom of page add: "Chapter 10-Training (See Chapter 16, FM 6-50.)"
A-1	1	Delete "FM 6-102, 6-160, 23-12, 23-65."
A-2		✓ Delete "FM 61-24"
A-2	1	✓ Change title of "100-5" to read "operations."
A-3	7	✓ Delete (TOE) "6-725"
D-3	D-6	✓ In line 10, delete "FM 6-160 and . . ."
D-4	D-9b(4)	Delete subparagraph; renumber "(5)" as "(4)".
D-4	D-10b(3) <i>FM</i>	In line 3, change "Fire Coordination Line (FCL)" to read "Restrictive Fire Line (RFL)"; in line 4, change "FCL" to read "RFL."; in line 8, change "fire coordination line" to read "Restrictive Fire Line."; in line 13, change "FCL" to read "RFL."

PAGE	PARAGRAPH	REMARKS
E—4	E—9g E—13c	After "S2", add "(when applicable)." In line 1, change "No fire line" to read "Coordinated Fire Line (CFL)."; in lines 5 and 7, change "No Fire Line" to read CFL).
E—5	E—14e E—15a(2)	In line 2, change "(to include radar)" to read "(to include radar when authorized)" Change "3/4" to read "5/4."
E—6	E—17a	In HQ and SVC battery column, change references to "3/4" to read "5/4"; in firing battery, ea column, change "3/4" to read "5/4", delete "wireman and 3/4".
E—7	E—17d(1) (c) E—17d(4)	In line 1, change, "security" to read "defensive." In line 1, change, "executive officer" to read "first sergeant."; in line 6, delete "(para 6—13, FM 6—140)", add "(FM 6—50)."
Index—5		After "Training:" add "(See FM 6—50)"; delete remainder of sub-topics under this heading.

2. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. New or revised illustrations, tables, paragraphs, or sections are indicated by a vertical bar adjacent to the identification number.

Remove page

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4—11 through 4—19
5—3 through 5—8
6—3 through 6—10
8—7, 8—8
10—1 through 10—4
Index 1 through Index 4

Insert page

i, ii
3—1 through 3—4
4—11 through 4—15
5—3, 5—4
6—3 though 6—6
8—7, 8—8
None
Index 1 through Index 4

3. The word "he" as used in this publication is intended to include both the masculine and the feminine genders. Any exception to this will be so noted.

4. These transmittal sheets should be filed in front of the manual for reference purposes.

FIELD MANUAL

No. 6—140

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 April 1973

FIELD ARTILLERY ORGANIZATIONS

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Purpose and Scope

See ch 1
a. This manual is a guide for the battalion commander of a field artillery cannon, missile, rocket, or aerial field artillery battalion. It is a guide for the staff of the commander; for the battery commanders; for all personnel within the battalion; and for commanders of supported units. The manual sets forth doctrine pertaining to the organization, command and control, and common tactics of the field artillery cannon, missile, rocket, and aerial battalions and batteries which will assist commanders in tactical situations. It establishes the responsibilities and general duties of key personnel.

See ch 1
b. The considerations that affect the employment of field artillery are generally the same for all cannon units, but the techniques of employment may necessarily vary. Special considerations affect the employment of field artillery missile, rocket, and aerial units. It is impractical to prescribe techniques to cover all situations; therefore, this manual should be used as a guide in determining the most suitable application of the doctrine discussed. The portions pertaining to administration and training apply generally to all field artillery battalions and batteries.

c. The battalions and batteries discussed in chapters 3 through 6 are division field artillery organizations. Significant differences between these organizations and other field artillery cannon, rocket, missile, and aerial organizations—for example, a combined headquarters, or a headquarters and service battery—are discussed as appropriate.

d. The material presented in this manual is applicable to nonnuclear warfare; to stability operations in a cold war; and to defense against chemical and biological agents. Operations in an active nuclear environment may require significant changes due to extensive dispersion on the battlefield and a significant reduction in electronic communication.

e. Material contained in other manuals is included in this manual only when necessary for understanding and continuity.

f. This manual implements certain international standardization agreements (STANAG) ratified by the United States in its treaty agreements with NATO, SEATO, and CENTO. Other STANAG for which there is field artillery readership responsibility are either integrated in the text or referenced to the appropriate field manuals prepared by other service schools.

g. Appendix A contains the references used in this manual. DA Pamphlets of the 310-series contain a list of all available references.

element
h. Major portions of this field manual are applicable to the ~~aerial field artillery battalion and batteries~~; the field artillery searchlight battery; and the field artillery target acquisition ~~battalion and batteries~~. The organization and specific considerations of field artillery units ~~other than cannon, missile, or rocket~~ are discussed in the field manuals listed below, and are cross-referenced with this field manual:

(1) FM 6-102, Field Artillery Battalion, Aerial Field Artillery.

1-1/2
2. FM 6-115, Field Artillery Searchlight Battery.

2
3. FM 6-120, Field Artillery Target Acquisition Battalion and Batteries.

1-2. Changes and Corrections

a. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Commandant, US Army Field Artillery School, Fort Sill, Oklahoma 73503. **ATTN: ATS F-TD-TM**

b. Changes affecting the safety of personnel should be transmitted to the addressees in a above by electrical means.

Section II. FIELD ARTILLERY ORGANIZATION

1-3. General

The organization of all field artillery units and headquarters is shown in detail in the appropriate tables of organization and equipment (TOE).

1-4. Classification

Throughout this manual field artillery units are referred to as either firing or nonfiring units. The firing unit of the field artillery cannon battalion is the field artillery cannon (howitzer/gun) battery. The firing unit of the field artillery missile (rocket) battalion is the field artillery missile or (rocket) battery. ~~The firing unit of the field artillery aerial field artillery battalion is the aerial field artillery battery.~~ The nonfiring units of field artillery battalions include either the headquarters and headquarters battery; and the service battery; or the headquarters, headquarters and service battery.

1-5. Battery

The field artillery battery is the smallest tactical and administrative unit of the field artillery battalion. Normally, the battery relies on its parent battalion for administrative and logistical support. When organic to a maneuver force (e.g., armored cavalry regiment), such support comes from the parent organization. In stability operations, the battery may be self-sustaining or may be satellited on other units or installations for support.

1-6. Battalion

The field artillery battalion is both a tactical and an administrative organization. All field artillery battalions are self-sustaining. A field artillery battalion organic to a division is referred to as a divisional field artillery battalion. A field artillery battalion not organic to a division is referred to as a separate, or nondivisional, field artillery battalion. The number of firing and nonfiring batteries in a battalion is prescribed by the battalion table of organization and equipment and depends on the mission and assignment of the battalion. Nondivisional field artillery battalions are normally assigned to a field army, and can be further attached, as required, to subordinate elements to include corps artillery, field artillery groups, division artilleries, and separate brigades (including organic field artillery).

1-7. The Field Artillery System

a. General. The field artillery system, employed at division and ~~force~~ artillery levels, provide the principal surface-to-surface fire support means of the Army. Field artillery units are equipped with cannon, rockets, guided missiles, or ~~aerial weapons~~ of various calibers and capabilities. They support the combat elements by neutralizing ~~or destroying~~ those targets most likely to hinder the accomplishment of the mission. The availability and proper use of fire support means are critical factors in the application of combat power. They provide the commander with a powerful means of rapidly influencing the course of the battle; of adding depth to the battlefield by counterfire and attack of hostile reserves and rear area installations; and of isolating the battlefield by restricting the enemy's movement in rear areas by disrupting his command, control, and transportation facilities. This fire support depends primarily on the effectiveness of the field artillery system, which consists of those functional elements necessary to obtain the desired effect on the target.

b. The Functional Elements. The functional elements of the field artillery system include the following:

(1) *Target acquisition.* Target acquisition is a critical function of the field artillery system. It is that part of the system which involves accurate and timely detection, identification, and location of targets in the detail required for target analysis, target evaluation, and computation of firing data. The fleeting nature of some tactical targets, the need for first round effectiveness, and the effectual use of fire direction computers make rapid, accurate target location mandatory. A target acquisition capability is normally organic, or available, to field artillery cannon units. Field artillery missile and rocket units are normally provided target information by the supported force headquarters, or by higher artillery headquarters.

(2) *Fire direction and coordination.* Fire direction and coordination are the fundamental elements of field artillery command and control, and the key to a more efficient and responsive field artillery system. Fire direction is the tactical employment of firepower, the exercise of tactical command of one or more units in the selection of targets, the concentration or distribution of fire, and allocation of

ammunition for each mission. It also includes the methods and techniques used in the fire direction center to convert target information into appropriate fire commands. Fire coordination is the planning and execution of fire so that targets are adequately covered by a suitable weapon or group of weapons. The bulk of current fire direction and coordination is done by using manual and voice procedures. Future fire direction and coordination will adapt automatic data processing (ADP) to support field artillery command and control. The major fire control and coordination functions are performed at battalion level. These include technical fire direction, fire support, and liaison. At higher headquarters, these include tactical fire direction, fire support, and liaison. Fire control may be exercised at battery level, enabling the battery to assume the battalion function, or to operate separately. In field artillery missile and rocket units, technical fire direction is a function of the firing battery or the launcher section. ~~Aerial field artillery units do not presently require technical fire direction.~~

(3) *Automatic data processing (ADP).* ADP is directed toward accomplishing operations faster, more accurately, and with greater economy of assets than with manual methods. ADP is planned for operation at division artillery, field artillery battalion, and field artillery battery. ADP will include the tactical fire direction system (TACFIRE). TACFIRE is a tactical computer system designed to increase the effectiveness and responsiveness of field artillery by increased accuracy, better and more rapid use of target information, reduced reaction time, and greater efficiency in the determination of fire unit capabilities and allocation for fire planning.

(4) *Survey.* Field artillery survey operations provide a common grid which will permit the massing of fires, delivery of surprise observed fires, delivery of effective unobserved fires, and transmission of target data from one point to another. The product of field artillery survey concerns the determination of precise location of weapons, target acquisition means, and provision of orientation data. A prerequisite to effective first-volley fire is a completed field artillery survey and target acquisition effort that furnishes the commander the position and orientation data for the weapon delivery system, together with the target location. The survey capability may be organic to the firing unit, or survey may be provided by a higher artillery headquarters.

(5) *Ballistic meteorology.* Field artillery meteorology is used to fulfill the meteorological needs of the ~~field army~~ ^{Army on the field} by providing ballistic messages, artillery computer messages, fallout prediction messages, sound ranging messages, and meteorological data to the air weather service. Atmospheric conditions along the trajectory of a projectile directly affect the accuracy of field artillery weapons. Weather conditions also affect the accuracy of target acquisition equipment, such as sound ranging, and corrections are applied to refine the accuracy of target locating equipment. Firing units require ballistic meteorology data. This data may be provided by division, or corps artillery headquarters, or may be organic to the unit.

(6) *Communications.* The ability of the field artillery system to render effective and responsive fire support is largely dependent upon an efficient and reliable communications means to support both voice and digital data communications. The effective use of ADP for command and control, meteorology, target acquisition, and survey support is based on the exchange of information between various field artillery elements in the form of digital data over contemporary field artillery networks. The integrated/automated field artillery system requires an adequate means of communication to allow various field artillery computers and remote terminal devices to address and transfer digital data to each other; however, at the same time, adequate voice communications must be provided. The principal media of communication for both voice and digital data are wire and radio. Adequate communications security equipment is necessary to limit the vulnerability of radio communications to exploitation by enemy intelligence activities. The necessary communications equipment and operating personnel are organic to all artillery echelons.

(7) *Logistics.* Logistical support of the field artillery system consists primarily of supply and maintenance. The largest single supply effort is in the area of ammunition resupply. This includes maintenance of the basic ammunition load in accordance with the announced available supply rate and maintaining the prescribed load of special ammunition. The primary maintenance effort is accomplished to provide for serviceable items of organic equipment to function under combat conditions. The field artillery battery resupply function is generally limited to Class I, III, and V supplies. The field artillery battalion is responsible for resupply of all classes of supply.

(8) *Mobility.* Tactical employment of the field artillery system requires frequent and timely movements by the various types of field artillery units. To be effective, field artillery units must have sufficient mobility to permit close and continuous support of the maneuver force. The ability to move rapidly and efficiently is essential to the accomplishment of the fire support mission. A successful move, in all types of terrain under adverse weather conditions, is essential to place the troops and equipment at their destination at the proper time, and in condition to accomplish the assigned mission. The transport (mobility) provided at all echelons of field artillery must be equal to, or greater than that provided to the supported force.

(9) *Organization.* The objective of field artillery organization is to provide a unit for combat which can most effectively and economically support the maneuver forces. As such, there are various types of field artillery units organized to support any type of maneuver force. Cannon artillery firing batteries are organized with six tubes, while missile and rocket batteries are organized with varying numbers of weapons. Units are organized to deploy and employ a specified weapon to obtain the required effects on a target. To accomplish this, the unit must be provided with a capability to implement each functional requirement of the field artillery system, to include a capability for defense and security. Employment flexibility and responsiveness are best when these elements are organic to the unit.

(10) *Employment tactics.* Field artillery units are employed in accordance with the mission of the supported force. In the offense, field artillery positions are selected well forward to support the attack and to avoid early displacement. In the defense, positions are echeloned in depth to provide flexibility of fire and to insure continuity of fire support in the event of enemy penetration which would require field artillery units to displace to the rear.

(11) *Weapon/ammunition combinations.* Field artillery has the day-night, all-weather capability to deliver accurate, effective fires for close-in support of the ground-gaining arms, and long-range interdiction and counterbattery fires on enemy targets. To exploit this capability, different types of weapon/ammunition combinations are required. Field artillery supporting fires may be delivered by the weapon/ammunition combinations discussed in general terms as follows:

(a) *Cannon weapons/ammunition.* Cannon weapons are capable of delivering all types of fire support. They are characterized by flexibility in employment, accuracy, ability to rapidly maneuver fires, a high rate of sustained fire, and the ability to mass large volumes of fire from dispersed positions under all conditions of weather and terrain. Cannon weapons are the primary close support weapons for the maneuver elements and, as such, require a number of different types of projectile fillers (e.g., high-explosive, smoke, illuminating, incendiary, and others). Cannon projectile needs are dictated by the type of fire support to be provided and by the ranges required. In the area of cannon ammunition, the primary elements are projectiles, propellants, and fuzes. The ability to properly support the maneuver force is directly tied to the range capability of the weapon, the carriage configuration, and the selection of ammunition types available. Cannon weapons must be capable of firing throughout the zone of action of the supported force, and of accompanying the force in all geographical environments and under all conditions of weather and terrain. Ballistic range capability is the nucleus of cannon development efforts. Requirements for this range are, in turn, determined by the area of influence of the supported force. Therefore, as the concepts of land warfare change, so do the requirements for supporting weapons change.

(b) *Missile and rocket weapons/ammunition.* Field artillery missile and rocket weapons are the only US Army fire support means available for day-night, all-weather delivery of large nuclear and nonnuclear payloads on targets within and beyond the range of cannon weapons. Field artillery rocket systems, capable of delivering large volumes of intense fires, are generally characterized by higher mobility, less accuracy, and less range than guided missiles. Field artillery missiles vary in range and accuracy and are less vulnerable to weather and enemy countermeasures than are aircraft. Guided missiles are generally restricted to the delivery of nuclear fires. Field artillery missiles and rockets are used to supplement or complement the fires of cannon weapons on the nonnuclear battlefield, on an as-required basis, in order to provide the requisite nonnuclear firepower capability against a variety of targets, at extended ranges, in any tactical situation, and under any of the warfare intensities.

(c) *Aerial field artillery weapons/ammunition.*

*nit*ion. Aerial field artillery weapons are mounted on aircraft which serve as the primary means of mobility and a platform from which the weapon can be fired. Aerial field artillery is organic to the airmobile division and may be assigned/attached at echelons above division level (force artillery). Aerial field artillery is employed to provide aerial fire support to maneuver forces throughout all areas of operation

and provides the requisite aerial fire support on the three-dimensional battlefield. It is especially useful for field artillery fire support requirements in any tactical situation which limits the mobility, effectiveness, and economical use of other fire support means. Aerial field artillery adds flexibility to the field artillery system through the use of the third-dimensional plane of the battlefield.



1

2



3

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CHAPTER 2 ORGANIZATION COMMAND, CONTROL, AND COMMUNICATION

Section I. COMMAND

2-1. Battalion Commander

a. General. The battalion commander is responsible for everything his command does or fails to do. Assisted by his staff, he controls all the tactical, logistical, and administrative activities of the battalion. He makes provisions for uninterrupted perpetuation of the chain of command in his organization by prescribing the succession of command for all contingencies. He is responsible for the accomplishment of his command's assigned mission.

b. Tactical Responsibilities. The commander establishes policies and plans and supervises the tactical employment of his battalion to include—

(1) Reconnaissance, selection, and occupation of position (RSOP).

(2) Fire direction, execution of fire, and, when applicable, formulation of the field artillery fire support appendix; and detailed coordination and integration of available fire support with the plan of operation of the supported unit.

(3) Coordination of the fire support of the supported unit commander when his battalion has the mission of direct support.

(4) Maintenance of liaison with the supported or reinforced unit commander by direct contact or by representation.

(5) Provision of continuous ground, map, and aerial reconnaissance for routes, position areas, and observation sites.

(6) Maintenance of current information concerning the enemy situation and the situation of the supported force.

(7) Control of ammunition expenditures.

(8) Communications and electronic security of electromagnetic emitters employed in the battalion.

(9) Processing of field artillery target acquisition information, and coordination of the information with other intelligence-gathering agencies.

(10) Readiness of his battalion to operate in a CBR environment.

c. Training. The battalion commander is re-

sponsible for the training of his unit. He directs the training program for the battalion and, assisted by his staff, coordinates the training of his unit with that of the next higher headquarters. He supervises the training by making frequent personal inspections and by analyzing the reports of inspections conducted by his staff officers and battery commanders.

d. Discipline. The battalion commander instills discipline in his battalion by leadership and by personal example. He closely supervises the mental, moral, and physical training of his men. In the administration of military justice, he appoints summary courts-martial and special courts-martial (unless otherwise directed) and reviews their findings and supervises the administration of, or imposes punishment under, the Uniform Code of Military Justice. In all disciplinary matters which are properly the prerogative of the battery commanders, he is careful to exercise supervision only, leaving active control to the battery commanders.

e. Morale. By personal action and through his staff and subordinate commanders, the battalion commander gives close attention to building and maintaining the morale of his unit. He prescribes a fair and uniform policy governing promotions, leaves of absence, decorations and awards, and duty assignments, and insures the efficient operation of the personnel support system (FM 12-4). Through appropriate staff elements, he obtains for his battalion the best available quarters and rations, recreational equipment and programs, religious services, postal facilities, and services of the various welfare agencies. By means of personal inspections, and with the assistance of the battalion medical personnel, he controls sanitation, personal hygiene, and health.

f. Administration. The battalion commander organizes and employs his staff to insure efficient administration of his battalion. The staff relieves the commander of detailed and routine duties, such as the preparation of records and reports. He makes frequent inspections to in-

sure that his administrative policies are followed, that the unit dining facilities are sanitary and properly operated, that living quarters are adequate, and that workload priorities are established.

g. Supply and Maintenance. Adequate and proper supply and maintenance assist the battalion commander in maintaining the combat efficiency of his unit. The battalion commander normally discharges his supply responsibilities through the S4. He supervises supply activities, however, to see that his supply policies are followed, that supply discipline is maintained, and that his battalion is supplied with the appropriate classes of supplies in the correct amounts. He provides for the training of all personnel in supply economy. He insures that ammunition supply is adequate and that basic loads are maintained. By means of command inspections, he insures that the authorized weapons, vehicles, and other equipment are on hand and properly maintained. In addition, he may request technical inspections and technical assistance supporting combat service support organizations (FM 29-23 and 29-30-1).

2-2. Battery Commander

a. The battery commander is responsible for everything his command does or fails to do. When a battery is not under the command and control of a field artillery battalion, the responsibilities of the battery commander are comparable to those of a battalion commander. When a battery is under the command and control of a field artillery battalion, the battery commander is responsible for—

(1) Insuring that the battery accomplishes its mission.

(2) Training the battery for combat readiness in conformance with the battalion training program and for attaining the prescribed training objectives.

(3) Maintaining materiel and equipment.

(4) Maintaining high standards of discipline and morale.

(5) Preserving the health and physical fitness of the battery personnel.

(6) Insuring adherence to proper safety precautions.

(7) Insuring that the battery functions in accordance with regulations and policies of higher commanders.

(8) Keeping the battalion commander and the personnel of his battery informed of the current situation.

(9) Establishing and maintaining a high degree of communications and electronic security.

(10) Managing his personal assets in accordance with established personnel programs.

b. In carrying out his command responsibilities, the battery commander—

(1) Personally plans, participates in, and supervises training to the maximum extent consistent with his other duties.

(2) Makes frequent inspections to insure that his orders are being carried out; that living quarters are adequate and well policed; that food is appetizing, properly prepared, and served on time; and that routine work is equitably distributed.

(3) Makes himself available, under appropriate conditions, for conferences with battery personnel on matters of a personal nature.

(4) Administers military justice.

(5) Gives attention to the assignment of personnel to insure placing the right man in the right job.

(6) Insures the responsiveness of the personnel support system to the needs of the individual (DA Pamp 600-8).

(7) Instructs and cross trains key subordinates in their duties.

(8) Maintains a troop information program.

(9) Emphasizes the maintenance and proper use of all equipment.

(10) Insures application of the principles of supply economy.

(11) Delegates authority to his officers and noncommissioned officers consistent with their positions and the efficient operation of the battery.

c. The plans and orders of the battery commander are based on those received from the next higher commander. The plans set forth a logical sequence of steps that must be taken by each subdivision of the battery at appropriate times to enable the battery to properly perform its mission. Brief and informal oral orders are employed by the battery commander. They should fit each specific situation, not merely refer to a checklist or repeat standing operating procedure (SOP).

Section II. CONTROL AND COORDINATION

2-3. The Field Artillery Battalion Staff

a. The battalion commander is provided with a staff to assist him in the control and coordination of battalion functions and activities. The organization and functions of field artillery staffs are flexible and may be varied by the commander to meet the demands of each situation. Since control of artillery and coordination of field artillery fire support are the principal duties of the commander, he assigns tasks to his staff to assist him in discharging those responsibilities.

b. The staff obtains appropriate information and furnishes required estimates and advice to the commander. The staff prepares the details of the battalion commander's plans, converts his decisions and plans into orders, and disseminates the orders to the command. Various members of the staff supervise the formulation and preparation of plans and orders and take the action necessary to execute them. The battalion staff must have a thorough knowledge of the commander's policies and, in areas for which no policy has been established, must initiate recommendations to establish command policy.

c. The organization of a battalion staff is based on the functions of the battalion commander and follows the organization of other military staffs. Within the limitations of the tables of organization, the staff organization and the assignment of functions to staff sections are the prerogatives of the battalion commander.

d. Although staff officers may formulate orders and transmit them to the batteries, they do so only in the name of the battalion commander since they have no command authority. The limits of their authority are determined by the battalion commander since he is responsible for orders issued by members of his staff.

e. The staff officer, as chief of a staff section, supervises the personnel in his section in accordance with the policies of the commander.

f. Coordination is essential within the staff, between the staff and subordinate commanders, and between the staff and the staffs of the next higher field artillery headquarters, the supported units, and the reinforced units.

2-4. Executive Officer

The executive officer of a field artillery battalion staff performs duties similar to those stated in FM 101-5 for a chief of staff. He is the

principal assistant and adviser to the battalion commander and complements the activities of the battalion commander. His functions may include the supervision of the establishment and operation of the field artillery battalion command post and coordination of the perimeter defenses for the battalion.

2-5. S1

a. The S1 of a field artillery battalion staff is the adviser to the commander on matters of personnel and general administration, and performs at battalion level the general duties outlined in FM 101-5 for the G1.

b. The S1 supervises the personnel staff NCO in the operation of the personnel support system.

2-6. S2

The S2 of a field artillery battalion staff directs the target acquisition and intelligence effort. His duties are to—

a. Initiate a systematic and coordinated search for target locations and information by all available collecting agencies. To accomplish this, he—

(1) Coordinates the work of all field artillery intelligence personnel and target acquisition agencies to include the use of airborne and unattended ground sensors. This includes Army aviation used for field artillery target acquisition.

(2) Maintains close liaison with the intelligence sections of higher, adjacent, and supported units for the purpose of exchanging information and furnishing mutual assistance in the target acquisition effort.

(3) Obtains and distributes maps, photomaps, and aerial photographs.

(4) Studies and interprets aerial photographs when image interpreter teams are not available, or supervises the activities of such teams when they are present.

(5) Directs counterbattery and counter-mortar intelligence activities, including training and coordinating shell reporting and crater analysis teams.

(6) Originates requests for reconnaissance missions by supporting aircraft.

(7) Recommends counterbattery/counterbattery criteria.

(7)(8) Recommends counterbattery status.

b. Collect, evaluate, and interpret target information and intelligence and disseminate

target intelligence in time for units or higher intelligence agencies to act on it.

c. Keep the commander and his staff and subordinate units informed of the enemy situation and capabilities, to include the enemy CBR capabilities.

d. Keep the S3 informed on intelligence matters.

e. Examine maps, photomaps, and aerial photographs for reliability of control, and to disseminate this information.

f. Prepare and disseminate intelligence reports.

g. Maintain the situation map and any other pertinent records required by the commander.

h. Furnish pertinent data for the command report.

i. Prepare a counterintelligence plan and supervise its execution to include coordinating the employment of all target acquisition systems.

j. Recommend signal security policy.

k. Supervise artillery intelligence training.

l. Inform the survey officer of all matters affecting survey.

m. Prepare a meteorological plan when authorized a meteorological section; obtain and distribute meteorological messages.

n. Coordinate radar operations and training with maximum utilization of electronic safety measures, *when applicable*.

o. Supervise personnel security and physical document security.

p. Prepare target lists.

q. Prepare target acquisition capability chart diagrams.

2-7. S3

The S3 of a field artillery battalion staff is responsible for organization, plans, training, and operations. The S3 performs duties both as a planner and as an operator on the field artillery battalion staff. This is best illustrated by his performance of operational duties when functioning as the fire direction officer. His additional principal duties are to—

a. Recommend to the commander plans for the employment of field artillery weapons and units.

b. Formulate plans and prepare operation orders for the commander's approval.

c. Keep the other members of the staff and the battery commanders informed regarding training, combat efficiency, and disposition of field artillery units.

d. Plan and supervise training and operations.

e. Coordinate with other staff officers on operations matters.

f. Prepare the field artillery fire support appendix for the supported unit when the battalion is assigned a DS mission.

g. Insure that the field artillery fire support appendix is coordinated with, and integrated into, the tactical plan of the combat elements of the supported unit.

h. Provide current field artillery fire capabilities information.

i. Keep the S4 informed of ammunition requirements.

j. Maintain current information of the friendly tactical situation at the fire direction center and exercise staff supervision over fire direction activities.

k. Keep the communication-electronics staff officer advised of all plans affecting signal communication requirements.

l. Supervise the preparation of operational records and reports.

m. Keep the S2 advised of all plans affecting survey and meteorological requirements.

n. Incorporate electronic security and electronic counter-countermeasures (ECCM) into unit training and operation plans.

o. Coordinate electronic warfare support of tactical operations.

2-8. S4

In a battalion with both a headquarters battery and a service battery, the service battery commander is also the battalion S4. In a battalion with a combined headquarters and service battery, the S4 is a member of the battalion staff and is assigned to the battalion headquarters. In both organizations, the S4 is responsible for the coordination and supervision of all logistical functions within the battalion and performs the general duties prescribed for the G4 in FM 101-5. He is responsible for the procurement and distribution of supplies and, when directed, for the establishment of supply points. Additional duties of the S4 are to—

a. Prepare and supervise the execution of a plan for the timely supply of ammunition and supervise the execution of the plan.

b. Keep the commander and staff informed of the ammunition and supply status of the command.

c. Maintain appropriate records of the ammunition status, the location of ammunition offices, ammunition supply points, and special

ammunition supply points, and the transportation available.

d. Maintain current records of all traffic data road nets, water points, supply points, DS and GS maintenance units.

e. Supervise all supply functions of the command to insure adequate procurement and proper distribution.

f. Maintain records of critical items of supplies and equipment.

g. Prepare and authenticate transportation orders (ammunition requests) for the batteries, and deduct the quantity of each item appearing thereon from the total quantity of the corresponding item on the total available supply rate or special ammunition load record of the battalion. (Transportation orders for divisional units are processed through the division ammunition officer as outlined in FM 54-2).

2-9. Liaison Officer/Fire Support Officer

a. The liaison officer is the field artillery commander's personal representative to the unit with which liaison is maintained. His duties consist of exchanging information relative to the plans, the situation, the policies, and the establishment and promotion of cooperation and coordination between the two units.

b. The fire support officer is the full time liaison representative from a direct support field artillery battalion. The direct support field artillery battalion provides fire support (liaison) officers to the supported force (maneuver) headquarters, and to its battalion-size subordinate elements. His duties include those of a liaison officer, and the added responsibility of coordinating all fire support on surface targets.

c. The specific duties of the liaison officer and the fire support officer are detailed in paragraphs 8-17 through 8-22.

2-10. Communications-Electronics Staff Officer

The principal duties of the communications-electronics staff officer assigned to a field artillery battalion are to—

a. Advise and assist the commander on signal communication matters.

b. Recommend and plan the communication system for the unit and supervise its installation and operation.

c. Obtain and distribute communications-electronics operation instructions (CEOI) ~~and communications-electronics standing instructions (CESI).~~ — see ch 1,

d. Prepare the communication SOP, and com-

munication portion of orders. ((C) AR 380-52).

e. Advise and assist the S4 in the procurement of communications-electronics supplies.

f. Plan and supervise all electronic countermeasures (ECM) and electronic counter-countermeasures (ECCM) training in the unit (FM 6-10).

g. Establish liaison with the communications-electronics staff officers of senior, subordinate, supported, reinforcing, reinforced, and adjacent units to coordinate and improve communications.

h. Conduct technical inspections of communications-electronics equipment.

i. Supervise and assist in communication and cryptographic security.

j. Assist the commander in carrying out communications security responsibilities.

k. Recommend the location of key installations within the command post area in coordination with the S3 and the headquarters battery commander.

l. Supervise and assist in the maintenance of communication equipment.

m. Maintain crypto account.

2-11. Surgeon

The battalion surgeon is a medical officer who is assigned to the battalion headquarters of nondivisional units only. Within divisional units an enlisted medical supervisor is provided. He has direct access to the battalion commander. He is directly concerned with sanitation and other matters affecting the health of the command, the medical care of troops, the proper employment of medical personnel, and the use of medical equipment and supplies. Specifically, he—

a. Recommends and supervises procedures pertaining to locating, giving first aid to, collecting, sorting, and evacuating the sick and wounded, and provides for and supervises medical treatment furnished by the battalion.

b. Recommends measures for the prevention and control of disease and safety measures for the prevention of accidents.

c. Supervises the training of all troops in first aid, hygiene, and sanitation, and the training of medical troops for individual and unit proficiency.

d. Establishes the battalion aid station, supervises its operation, and arranges for displacement of the aid station when required.

e. Performs professional medical treatment duties as required.

f. Recommends requests for additional medical assistance as needed.

2-12. Motor Officer

The motor officer is an adviser to the commander concerning battalion motor transportation and maintenance matters. His responsibilities include, but are not limited to, the following functions.

a. Supervises the battalion maintenance section.

b. Supervises the instruction of vehicle drivers and the technical training of maintenance personnel, examines driver candidates, and issues vehicle operator permits.

c. Plans for and supervises the conduct of motor transport schools within the organization.

d. Plans the maintenance workload based on the availability of parts and tools, the level of experience of personnel, and the tactical situation.

e. Supervises the scheduling of equipment for prescribed preventive maintenance services; and directs and supervises the use, care, inspection, and maintenance of vehicles in the organization.

f. Insures, by inspecting vehicle records periodically, that maintenance and repair work performed by the battery and/or the battalion maintenance sections conform to established standards.

g. Assists commanders in making command inspections.

h. Coordinates with the direct support maintenance activity on functions pertaining to maintenance requests and modification work orders.

i. Coordinates requests for repair parts and supplies.

j. Establishes and insures observance of safety regulations applicable to maintenance and vehicle operations.

k. Supervises recovery, evacuation, and repair of vehicles.

2-13. Chaplain

The chaplain, when authorized, operates in accordance with the command and staff relationships and doctrine outlined in FM 101-5. He insures that religious services and pastoral care are provided all assigned and attached personnel of the battalion.

2-14. Target Acquisition Platoon Leader

The specific duties of the target acquisition platoon leader, when authorized, are to—

a. Supervise the target acquisition platoon.

b. Function as the counterbattery intelligence officer (CBIO).

c. Select positions for sensing devices, ranging systems, and meteorological sections.

d. Assist the S2 in developing field artillery targets.

e. Perform duties assigned the reconnaissance and survey officer (para 2-15).

2-15. Reconnaissance and Survey Officer

The specific duties of the reconnaissance and survey officer, when authorized, are to—

a. Prepare and execute a survey plan.

b. Obtain survey control and carry it to lower echelons.

c. Conduct reconnaissance for routes, position areas, and observation posts as directed. Paragraph 3-4, FM 21-40, and paragraph 3-4b, FM 3-12 contain guidance on chemical and radiological reconnaissance.

d. Supervise survey training.

e. Plan continuously for future reconnaissance and extension of survey.

f. Work closely with the S2 and S3 in securing needed information on intelligence, target acquisition, observation, routes, and future position areas.

g. Exchange survey data and information with the survey officers of higher, lower, and adjacent units.

h. Determine the accuracy of available maps.

i. Supervise route marking operations as needed.

2-16. Radar Technician

The duties of the radar technician, when authorized, are to—

a. Advise the commander and staff on all radar matters, including radar coverage, electronic countermeasures, and antijamming techniques.

b. Advise the S2 on, and assist him in, organizing and supervising radar training and operations.

c. Select radar positions.

d. Submit necessary reports and keep pertinent records.

e. Supervise radar maintenance.

f. Provide radar liaison with higher headquarters.

g. Advise the S4 on, and assist him in, procuring radar supplies.

h. Maintain appropriate clutter and coverage diagrams.

i. Supervise radar operations.

2-17. Aviation Officer

The aviation officer, when authorized, is the principal adviser to the commander and his staff on all aspects of Army aviation. He is responsible for—

- a. Supervising the maintenance of all aircraft and associated equipment.
- b. Processing all requests for Army aviation support from subordinate units.
- c. Allocating, within the commander's stated priorities, organic aviation assets.
- d. Forwarding to the appropriate staff element all requests for Army aviation support that are beyond organic capabilities.
- e. Participating in the training of aerial observers.
- f. Performing other duties as assigned by the commander.

2-18. Sergeant Major

The sergeant major is the senior noncommissioned officer assigned to a field artillery battalion. His responsibilities include, but are not limited to, the following functions:

- a. Is a member of the battalion commander's staff and acts in the name of the commander when relaying information to or dealing with the noncommissioned officer personnel of the battalion.
- b. Must know the functions of the headquarters and be able to assist in the organization of the command post.
- c. Assists the executive officer and S1 in administrative matters.
- d. Exercises command in the absence of all commissioned and warrant officers assigned or attached to the battalion.
- e. Is concerned with soldierly appearance, conduct, and discipline within the battalion. He is particularly concerned with these qualities in the noncommissioned officers.
- f. Actively assists in the investigation of any charges involving noncommissioned officers, and may function as a member of any board pertaining to noncommissioned officers.
- g. Instructs battalion noncommissioned officers in their duties, and orients all newly assigned personnel (officer, noncommissioned, and enlisted) in the history and traditions of the unit.
- h. Is normally a member of the unit fund, character guidance, and promotion councils.

2-19. Chemical NCO

The staff chemical NCO (when authorized by

augmentation) assists the unit staff in their CBR responsibilities and works under the staff supervision of the S3.

2-20. Personnel Staff NCO

a. *General.* A personnel staff NCO is authorized when a field artillery battalion is serviced by a centralized personnel office. He is a key part of the personnel support system, advises and assists commanders in personnel administration and personnel management matters, and functions as the principal liaison agent between his organization and the personnel office.

b. *Primary Duties of the Personnel Staff NCO.* The personnel staff NCO—

(1) Receives personnel rosters and reports from the personnel office, and, at the request of interested staff agencies, extracts required information; maintains current rosters and reports from morning report entries, special orders, etc., until subsequent rosters and reports are received.

(2) Assembles data from the reports and rosters listed in (1) above from copies of the morning reports, from information provided by the personnel office, or from subordinate units; and keeps himself and the commander informed on the strength, shortages, overages, and the status of gains and losses for the organization.

(3) Consolidates requests for information from the units serviced; obtains information requested from the personnel office and disseminates it upon receipt.

(4) Visits subordinate organization clerks, first sergeants, administrative NCO's, and commanders, and the personnel office to assist in resolving problems which may arise; conducts necessary inspections of files and procedures pertaining to personnel matters; keeps the commander and personnel administrator advised of significant problems, trends, and accomplishments within the organization.

(5) Processes and handles all personnel matters sent to or through the organization from subordinate units or higher headquarters, and those matters originating at the organizational level.

(6) Reviews personnel actions of documents returned to subordinate organizations for correction, and takes necessary action to prevent recurrence of the same type error.

(7) Insures correct routing of personnel actions and related documents.

(8) Makes appropriate recommendations on personnel matters to the commander and in-

sure that the commander's decision is properly prepared and forwarded.

(9) Gives advice and assistance to subordinate organization clerks on the preparation and handling of personnel matters. If necessary, the PSNCO conducts classes for clerks to insure high quality work and to correct common recurring errors.

(10) Serves as a technical expert and furnishes guidance and information to first sergeants, administrative NCO, organization clerks, and individuals.

(11) Consolidates, compiles, and checks the validity of requests for special orders, and insures that personnel requests are forwarded to

the personnel office in accordance with specified directives.

(12) Controls the visits of individuals to the personnel office in conjunction with organization first sergeants/administrative NCO.

(13) Maintains suspense logs on the preparation of officer efficiency reports and enlisted efficiency reports to insure that they are returned to the personnel office within the time allotted for necessary processing.

(14) Serves as the personnel sergeant of the organization when it is detached from the parent organization and a support team is provided to function as a personnel office.

CHAPTER 3 ORGANIZATION

Section I. THE HEADQUARTERS AND HEADQUARTERS (AND SERVICE) BATTERY

3-1. General

a. Organization. Most field artillery battalions are organized with a headquarters and headquarters battery (HHB), a specified number of firing batteries (cannon, rocket, missile) and a service battery. In some battalions, the headquarters and headquarters battery and the service battery are combined into a headquarters, headquarters and service battery (HH&SB). Figure 3-1 shows the field artillery organizations of the infantry, armored, mechanized, airborne, and airmobile divisions. Figure 3-2 shows the field artillery organizations of corps; group; separate infantry, armored/mechanized, and airborne brigades; and the armored cavalry squadron.

b. Mission. The mission of headquarters battery is to assist the commander and his staff in the performance of their duties by providing the personnel, equipment, and facilities to operate the headquarters and to provide administrative, operations, supply, maintenance, and communication support to the elements of the command.

3-2. Organization and Functions

a. The organization and staff of a headquarters and headquarters battery of a direct support field artillery battalion (divisional) are shown in figures 3-3 and 3-4 respectively. The battalion headquarters consists of the battalion commander and his staff. The headquarters battery is normally composed of the following elements:

- (1) Battery headquarters.
- (2) Headquarters support section.
- (3) Operations and fire direction section.
- (4) Target acquisition platoon (survey, radar, and forward observer section) and meteorological section when authorized.
- (5) Communications platoon (radio and wire sections).
- (6) Liaison section(s) (maneuver brigade and maneuver battalion).
- (7) Medical section.
- (8) Air defense section.

b. In battalions with a combined headquarters and headquarters battery and service battery, the headquarters battery includes the elements necessary to perform the following additional

functions:

- (1) Personnel administration (when the battalion operates separately).
- (2) Ammunition supply.
- (3) Supply (other than class V and class VIII).
- (4) Maintenance of vehicles and equipment.

c. The battery headquarters is supervised by the headquarters battery commander. The first sergeant is his principal enlisted assistant and performs the functions of battery administration, mess, supply, and maintenance.

d. The headquarters support section is supervised by the battalion S1. The section is responsible for preparing the administrative correspondence for the battalion, maintaining liaison with the division administration company in matters concerning personnel, and furnishing the radiotelephone operators/drivers for the battalion commander and the battalion executive officer.

e. The operations and fire direction section is supervised by the S3 and performs fire direction and fire planning for the battalion. In addition to the fire direction capability of this section each cannon battery has a fire direction capability.

f. The target acquisition platoon consists of a platoon headquarters, a survey section, a radar section when applicable, and a forward observer section, and when authorized, a meteorological section. The platoon is supervised by the reconnaissance and survey officer and performs the functions of survey, intelligence, target location, adjustment of fires and surveillance, and in some cases determination of meteorological data for the battalion as directed by the S2. The composite 155-mm/8-inch howitzer battalion of the infantry division artillery, the 8-inch howitzer battalion of the armored and mechanized infantry division artillery, and each corps cannon battalion are authorized a survey section rather than a target acquisition platoon because these type units normally are not assigned a mission of direct support. These units usually have their fires planned by an outside source.

g. The communications platoon consists of a platoon headquarters, a radio section, and a wire section. (The Pershing battalion includes a communications center and maintenance section.) This platoon installs, operates, and main-

	<i>Infantry Div Arty</i>	<i>Armd/Mech Div Arty</i>	<i>Airborne Div Arty</i>	<i>Airmobile Div Arty</i>
H&HB div arty (inf)	X 6—302__			
FA bn, 105-mm (towed) (3) HH Btry FA btry, 105-mm (3) Svc btry	X 6—155__			
FA bn, 155-mm (towed)/ 8-inch (SP) H&H btry FA btry, 155-mm (3) FA btry, 8-inch (1) Svc btry	X 6—165__			
FA bn, Honest John HHS btry FA btry, HJ (2)	X 6—175__			
H&HB div arty (Armd/Mech)		X 6—302__		
FA bn, 155-mm (SP) (3) H&H btry FA btry, 155-mm (3) Svc btry		X 6—365__		
FA bn, 8-inch (SP) H&H btry FA btry, 8-inch (3) Svc btry		6—395__		
FA bn, Honest John HHS btry FA btry, HJ (2)		X 6—175__		
H&HB div arty (Airborne)			X 6—201__	
FA bn, 105-mm (towed) (3) HH&S btry FA btry, 105-mm (3)			X 6—205__	
H&HB div arty (Airmobile)				X 6—701__
FA bn, 105-mm (towed) (3) HH&S btry FA btry, 105-mm (3)				X 6—705__
FA bn, 155-mm (towed) (1) HH btry FA btry, 155-mm (3) Svc Btry				X 6—715__
Aviation btry (1)				X 6—702__
Target Acquisition btry	6—307__	6—307__	6—307__	6—797__

Figure 3—1. Field artillery organization—divisional.

	Corps Arty	Group Arty	Sep Bde Inf	Sep Bde Lt Inf	Sep Bde Air- borne	Sep Bde Armd/ Mech	Armd Cav Sqd
H&H btry, corps arty	X						
H&H Btry, FA group		X 6-401__					
FA bn 105-mm (towed) HH&S btry FA btry (3)				X 6-115__			
FA bn 105-mm (towed) HH&S btry FA btry (3)					X 6-205__		
FA bn 155-mm (SP) HH btry FA btry (3) Svc btry						X 6-375__	
FA bn 105-mm (towed) H&H btry FA btry, 105-mm (3) Svc btry	X 6-405__		X 6-185__				
FA bn 155-mm (towed) H&H btry FA btry, 155-mm (3) Svc btry	X 6-425__						
FA bn 155-mm (SP) H&H btry FA btry 155-mm (3) Svc btry	X 6-455__						
FA bn 175-mm (SP) H&H btry FA btry, 175-mm (3) Svc btry	X 6-435__						
FA bn, 8-inch (SP) H&H btry FA btry, 8-inch (3) Svc btry	X 6-445__						
FA bn, Honest John HHS btry FA btry, HJ (3)	X 6-525__						
FA bn, Sergeant HHS btry FA btry, Sergeant (2)	X 6-555__						
FA Bde, Pershing H&H btry	X 6-604__						
FA bn, Pershing H&H btry FA btry Pershing (4) Svc btry	X 6-615__						
FA btry, 155-mm (SP)							X 6-37__
FA bn, Lance H&H btry FA btry, Lance (3) Svc btry	X 6-595__						

Figure 3-2. Field artillery organizations (nondivisional).

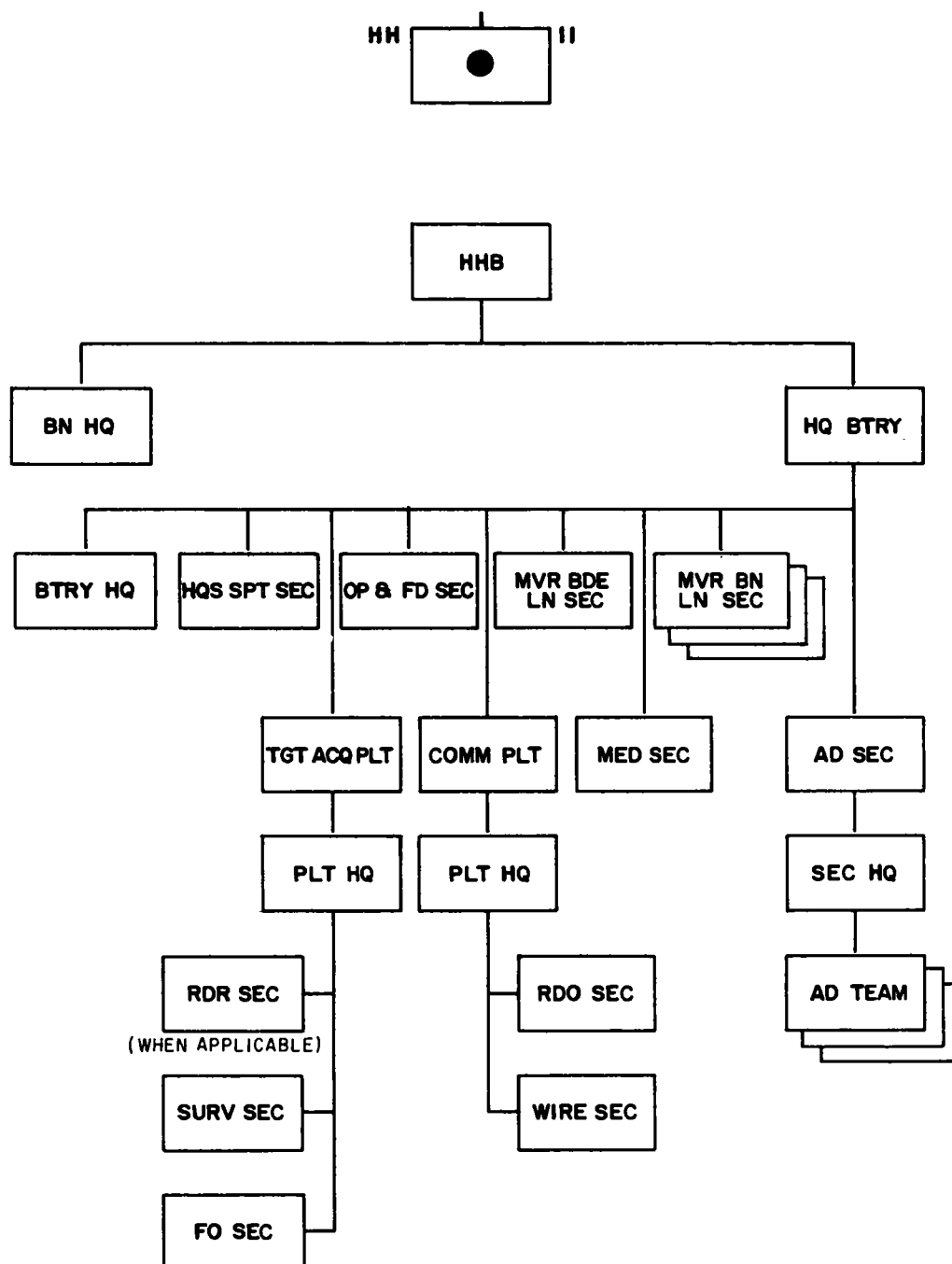


Figure 3-3. Organization of Headquarters and Headquarters Battery, Field Artillery Battalion (Direct Support).

tains the battalion communication system under the supervision of the communications-electronics staff officer. The platoon headquarters also operates the battalion message center.

h. The liaison section(s) performs liaison activities in support of the battalion mission as

directed by the battalion commander.

i. The medical section establishes the battalion aid station. Under the supervision of the enlisted medical supervisor, the section provides for sick call, dispensary-type medical

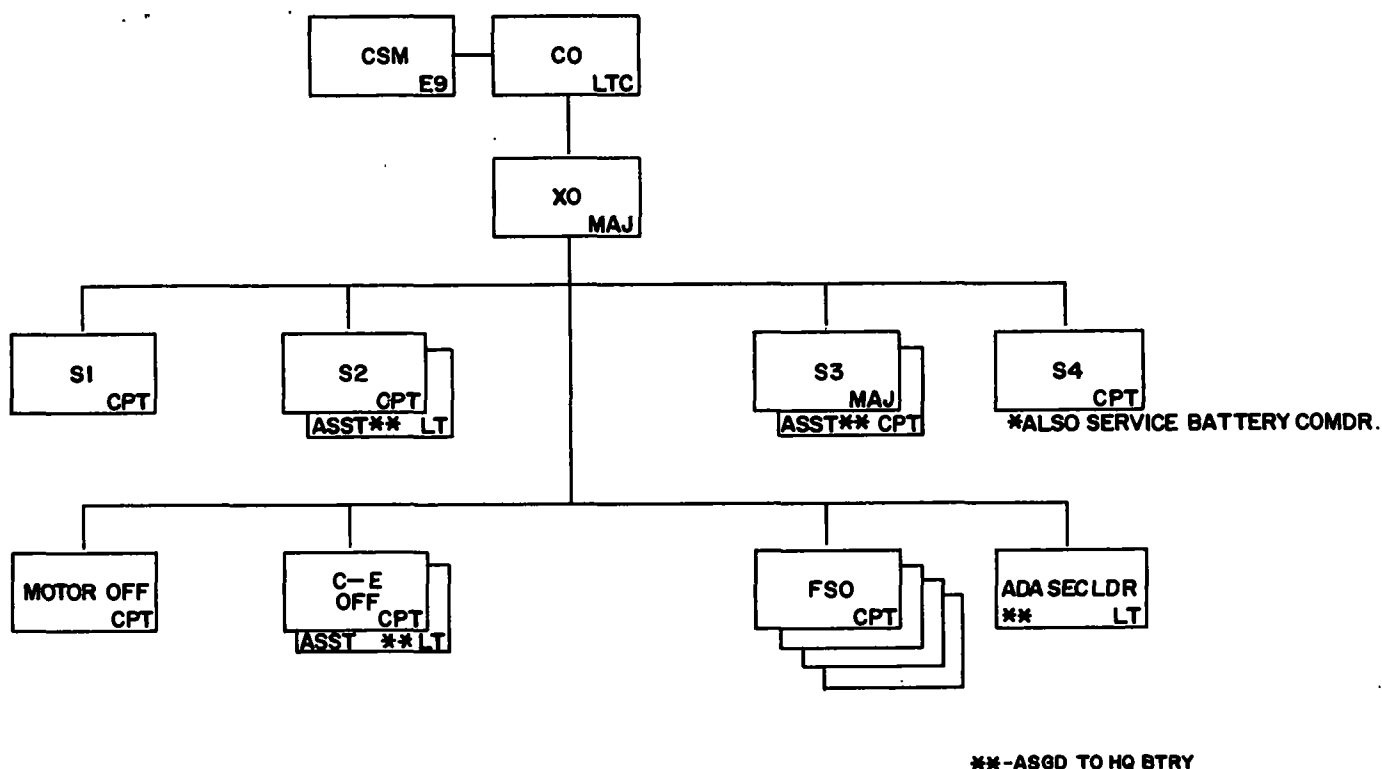


Figure 3-4. A Field Artillery Battalion Staff (Direct Support).

service, emergency medical treatment for patients who require further evacuation, and definitive treatment for those who can be treated within the battalion and returned to duty.

j. In nondivisional field artillery battalions that are authorized Army aircraft and aviation personnel, an aviation officer is included on the staff of the battalion commander. The aviation officer is assigned to the aviation section of the headquarters and headquarters battery. The aviation officer performs duties pertaining to Army aviation and advises the commander on aviation matters.

k. The air defense section provides the field artillery cannon battalion with a low-altitude air defense capability. Each divisional and separate cannon battalion is authorized one air defense (Redeye) section composed of a section headquarters and three air defense (Redeye) teams to provide one team for each battery, as needed. Each cannon battalion organic to a separate brigade is authorized one Redeye section composed of a section headquarters and four air defense (Redeye) teams. In both battalions, the teams will be allocated to units to satisfy tactical requirements. The section headquarters consists of a section leader lieutenant, a section sergeant, and a radio operator. Each team consists of a team chief and a gunner,

both of whom are skilled in the operation of the Redeye weapon. The teams are commanded and controlled by the Redeye section headquarters, and are deployed as directed by the battalion commander based upon recommendations of the Redeye section leader.

3-3. Duties of the Battery Commander

a. The commander of the headquarters battery exercises command as prescribed in paragraph 2-2. As headquarters battery commander, he—

- (1) Selects the locations for elements of the command posts in coordination with the communications-electronics staff officer and S3.
- (2) Organizes the command post area.
- (3) Supervises the displacement of the command post.
- (4) Supervises and coordinates the administration of the headquarters and headquarters battery.
- (5) Organizes local security for the command post area.

b. The personnel of the headquarters battery are commanded by the battery commander; however, they perform the greater part of their duties under the supervision of the battalion staff officers. The battery commander and the battalion staff are equally concerned with the welfare and performance of the men under their supervision.

Section II. THE FIELD ARTILLERY CANNON BATTERY (SEE FM 6-50)

3-4. Mission

The mission of the field artillery cannon battery is to provide the firing component of the field artillery cannon battalion and to furnish its portion of the battalion communication system. The cannon battery has the personnel and equipment necessary to deliver fire, communicate, move, and perform limited administration. A cannon battery with organic forward observers has a significant target acquisition capability, particularly in stability operations. The cannon battery may operate as a separate tactical unit for a limited period of time. When the battery is operating independently, additional personnel and equipment may be attached to meet the requirements of the mission.

3-5. Organization

a. The organization of all cannon batteries is fundamentally the same with the exception of the number and type of cannon authorized. The battery consists of the—

- (1) Battery headquarters.
- (2) Communications section.
- (3) Firing battery.

(a) Light and medium batteries (105-mm and 155-mm howitzer) are authorized six cannon sections.

(b) Heavy batteries (8-inch howitzer and 175-mm gun) are authorized four cannon sections.

(4) Ammunition section.

(5) Forward observer section(s) (where applicable by TOE).

(6) Survey section (where applicable by TOE).

b. The battery headquarters provides the personnel and equipment required to perform the administrative, mess, supply, and motor maintenance functions for the battery.

c. The communications section consists of the personnel and equipment required to install and maintain communications for the battery.

d. The firing battery consists of the personnel and equipment required for determining firing data and firing the cannons. It includes the firing battery headquarters, the battery fire direction center, and the firing platoons or sections. A cannon platoon includes two cannon sections. When used in firing commands, or for adjustment, it is normally given as LEFT (RIGHT) (CENTER) PLATOON.

e. The ammunition section consists of the personnel and equipment required for ammunition resupply.

3-6. General Considerations for Employment

The fundamentals of employment of field artillery apply particularly to the field artillery cannon battery operating as the fire unit of the battalion. The following considerations are applicable to the employment of a cannon battery:

a. When a cannon battalion is assigned a tactical mission of direct support, the cannon battery normally furnishes its portion of the battalion fire support to the supported force. A forward observer section is provided to each company-size maneuver element of the supported unit in order to provide a means for continuous and timely fire support. When a cannon battalion is assigned a tactical mission of reinforcing, general support-reinforcing, or general support, the cannon battery is employed as directed by the field artillery battalion commander. A field artillery cannon battery normally is not placed in reserve. Other inherent responsibilities are listed in FM 6-20.

b. When a cannon battery or elements thereof are detached from the battalion to operate independently as in stability operations, the fundamentals of employment of the battery are essentially the same as those of the battalion (FM 6-20).

c. Division artillery batteries are normally assigned a direct support mission and must be trained in, and capable of, employing the 115-mm rocket launcher, when authorized, to support an independent chemical mission.

d. The same direct support field artillery battalion should habitually support the same maneuver brigade when possible. Further, the same battery should support the same infantry (maneuver) battalion when possible. This habitual association creates a smooth-working relationship, and several benefits are derived such as the special confidence of the maneuver force in their battery, joint responsibilities in the perimeter defense, and the familiarity of individuals with operating procedures and each other. Except during nuclear operations or the threat of nuclear operations, battery and battalion command posts may be collocated with their respective maneuver battalion and brigade command posts to assist in control, coordination, and security.

3-7. Duties of the Battery Commander

The commander of a cannon battery exercises command by performing the duties prescribed in paragraph 2-2.

Section III. THE FIELD ARTILLERY MISSILE (ROCKET) BATTERY

3-8. Mission

a. The mission of the field artillery missile (rocket) battery is to provide the firing component of the battalion to which it is organic and to furnish its portion of the battalion communication, survey, administrative, tactical, and support functions of the battalion.

b. The mission statements of the missile (rocket) batteries are included in the appropriate system field manuals. The field manuals include: FM 6-61, FM 6-37, FM 6-39, and FM 6-42 Field Artillery Battalion, Lance (when published).

3-9. Organization

The organization of missile (rocket) batteries is fundamentally the same as that of cannon batteries except for the number and type of firing elements authorized. A missile (rocket) battery consists of the—

a. Battery headquarters.

b. Communications section (Honest John); battery detail, to include communications and survey (Sergeant and Lance); and communications platoon (Pershing).

c. Firing battery (Honest John and Lance); firing platoon (Sergeant and Pershing).

(1) Honest John, two launchers.

(2) Sergeant, one launcher.

(3) Pershing, nine launchers (Quick Reaction Alert (QRA) Role).

(4) Lance, two launchers.

3-10. General Considerations for Employment

a. *General.* The fundamentals of employment of field artillery apply to a missile (rocket) battery operating as the fire unit of the battalion.

b. Assignment.

(1) *Honest John.* Two Honest John field artillery batteries are assigned to the divisional Honest John battalion; three batteries are assigned to the nondivisional Honest John battalion. Each battery provides a firing component of the battalion in providing field artillery rocket fires, with a variety of warheads, in general support of corps or division; in reinforcing the fires of other artillery units, and in providing fire support to allied nations as a firing element of a US Army missile Command.

(2) *Sergeant.* Two Sergeant field artillery batteries are assigned to the Sergeant battalion. Each battery provides a firing component of the battalion in furnishing field artillery missile fires in support of ~~a field army or corps~~.

(3) *Pershing.* Four Pershing field artillery batteries are assigned to the Pershing battalion. Each battery provides a firing component of the battalion in furnishing nuclear fires in special employment or in general support of a field army or an independent corps.

(4) *Lance.* Three Lance field artillery batteries are assigned to a Lance battalion. Each battery provides a firing component to the battalion in furnishing field artillery missile fires in general support of ~~a field army or corps~~.

3-11. Duties of the Battery Commander

The commander of a field artillery missile (rocket) battery exercises command by performing the duties prescribed in paragraph 2-2. In addition, the battery commander is responsible for those specific duties peculiar to a particular system as outlined in FM 6-61, FM 6-37, FM 6-42 and FM 6-39.

Section IV. THE SERVICE BATTERY

3-12. Mission

The mission of the field artillery service battery (or the service element of the headquarters, headquarters and service battery) is to procure and distribute all classes of supplies to the units of the battalion, maintain supply records, provide ammunition service, and perform organizational maintenance not within the capabilities of the batteries. The more complex missile systems, e.g., Pershing and Sergeant, contain within the service battery or service element of

headquarters and service battery, a direct support missile maintenance section for performing maintenance on missile-peculiar equipment. However, neither Honest John nor Lance has this capability.

3-13. Organization

a. The organization of all field artillery service batteries is fundamentally the same. The separate service battery is divided into various sections to assist in control and operation. The

service element of the headquarters, headquarters and service battery is also organized into various sections to provide supply, administrative, maintenance, and ammunition support.

b. The battery consists of the battery headquarters, battalion supply section, battalion maintenance section, and an ammunition train. Personnel and finance support for divisional artillery battalions is furnished by the adjutant general and finance companies of the division. When divisional field artillery battalions are operating separately from the division, a personnel team detached from the AG company, is attached to the service battery. In nondivisional field artillery battalions, personnel and finance support are provided by nondivisional personnel service companies and finance support organizations.

c. The battery headquarters performs command, administrative, mess, supply, and maintenance functions for the battery.

d. The battalion supply section performs supply functions for the battalion. This section maintains necessary property records, consolidates requisitions and turn-in slips for the batteries, procures and issues supplies, and assists the batteries in all matters concerning supply.

e. The battalion maintenance section performs all organizational motor maintenance functions which are not within the capabilities of, or authorized to be performed by, the batteries.

f. The battalion ammunition train performs ammunition supply and resupply functions for the field artillery batteries of the battalion.

3-14. Duties of the Battery Commander

The commander of a service battery performs the duties and has the responsibilities of both a commander and an S4. The duties of a battery commander are discussed in paragraph 2-2, the duties of the S4 in 2-8.

3-15. Special Considerations

a. *Routine Battery Duties.* Provisions for routine battery duties such as guard and fatigue should receive special attention, since most of the personnel in the service battery are assigned to sections that perform battalion functions. The battalion sections plan their work so that personnel are available for routine battery duties at the prescribed time.

b. *Replacements.* Personnel replacement support for a field artillery battalion organic to a division is provided by the AG company. The

personnel replacement support for nondivisional field artillery battalions normally is performed by the servicing personnel service company.

c. *Motor Maintenance.* The vehicles of the service battery are used almost continuously in hauling supplies and ammunition for the battalion. For this reason, additional emphasis and a higher priority may be placed on the organizational maintenance of these vehicles.

3-16. Battalion Supply Section

a. *Divisional Field Artillery Battalion.* The battalion supply section of the service battery of a divisional artillery battalion is normally responsible for procuring and distributing all classes of supply, except ammunition, for the battalion. However, if the unit distribution system is in effect, the division support command relieves the battalion of the responsibilities for the classes of supply that are normally delivered from ~~field army~~ installations direct to the division support command and subsequently distributed to division units on a unit distribution basis.

b. *Nondivisional Field Artillery Battalion.* The supply section of the service battery of a nondivisional field artillery battalion procures, breaks down, and distributes all classes of supply, except ammunition, for the battalion.

3-17. Procurement

a. *General.* The battalion supply section prepares and submits consolidated supply requisitions or requests for all batteries of the battalion. When the battalion is not operating under the unit distribution system, the supply section procures supplies for the battalion at the supply points, at the times specified in administrative orders or messages issued by the headquarters responsible for the logistical support of the battalion.

b. *Classes of Supply.* There are ten major classifications of supply which are discussed in (1) through (10) below. The major classes of supply are subclassified, and the subclassifications are designated by a lettering system (fig 3-5).

(1) Class I.

(a) *Definition.* Class I supplies consist of all subsistence items, including combat rations, in-flight rations, refrigerated and nonrefrigerated subsistence items (less combat rations), and gratuitous health and welfare items.

(b) *Requests and requisitions.* The supply section draws rations from the division

class I distribution point or receives rations through the unit distribution system on the basis of the daily ration request or the periodic daily summary.

(c) *Distribution.* A divisional artillery battalion uses organic transportation to pick up rations from the division supply point. The rations are then broken down into battery-size lots and delivered to the battery kitchens. Non-divisional units receive distribution in accordance with arrangements made with the appropriate supply support echelon.

(2) Class II.

(a) *Definition.* Class II supplies consist of selected supplies and equipment for which allowances are prescribed by tables of organization and equipment (TOE), tables of allowance (TA), or special lists or letters. Class II supplies include clothing, individual equipment, organizational tool sets and tool kits, hand tools, tentage, and housekeeping and administrative supplies and equipment.

(b) *Requests and requisitions.* Field artillery units normally enter combat with all authorized class II items. When these items are lost, destroyed, or worn out, the supply section consolidates all requests for these items and forwards a consolidated requisition to the division supply office for divisional units or to the appropriate supply support echelon for non-divisional units. Requisitions for regulated or command-controlled class II items must be forwarded through command channels.

(c) *Distribution.* Class II items are distributed on a unit distribution basis or are procured by the battalion supply section.

(3) Class III.

(a) *Definition.* Class III supplies consist of all-purpose petroleum fuels, lubricants, hydraulic and insulating oils, preservatives, liquid and compressed gases, bulk chemical products, coolants, deicing and antifreeze compounds, together with components and additives of such products, and coal.

(b) *Requests and requisitions.* Certain class III items such as petroleum do not require formal requisitioning. Empty containers, for example, presented at class III supply points or distribution points are evidence of a need for resupply. Other items are requested on the basis of daily or anticipated requirements of the battalion.

(c) *Distribution.* Unit organic cargo trucks or bulk fuel tankers or pods distribute fuels and lubricants from the supply points to the batteries of the battalion. The supply section

of the service battery of a nondivisional field artillery battalion draws class III products from supply points specified by the next higher headquarters.

(4) Class IV.

(a) *Definition.* Class IV supplies consist of construction materials to include installed equipment and all fortification/barrier materials.

(b) *Requests and requisitions.* Special supplies, such as engineer materials and those supplies required in greater quantities than those authorized by TOE or TA, are procured on a requisition basis when such procurement is authorized by higher headquarters.

(c) *Distribution.* Distribution is made to the battalion on a unit distribution basis or by issues to the battalion supply section at designated distributing points. Class IV supply is accomplished generally in the same manner as class II.

(5) Class V.

(a) *Definition.* Class V supplies consist of ammunition of all types to include chemical, radiological, and special weapons and bombs; explosives; mines; fuzes; detonators; pyrotechnics; missiles; rockets; propellants; and other associated items. Ammunition is classified as conventional or special, and is further subclassified as air or ground.

(b) *Requests and requisitions.* Personnel concerned with class V supply should be familiar with ammunition supply terms such as basic load, required supply rate, available supply rate, and special ammunition load. Requisitions are made for replacement of expenditure from the basic load and to comply with the announced available supply rate (ASR).

(c) *Distribution.* The battalion ammunition train draws and turns in ammunition on a transportation order basis as outlined in FM 9-6 and operates a battalion ammunition supply point when authorized.

(d) *Other.* Supply procedures for special ammunition are described in the FM 101-31 series and FM 9-6.

(6) Class VI.

(a) *Definition.* Class VI supplies consist of personal demand items (nonmilitary sales items).

(b) *Requests and requisitions.* During combat operations, class VI supplies may be issued automatically. The amount of class VI supplies issued is determined by the availability of the items; the unit strength; and the health, welfare, and morale requirements of the

unit. When these items are not issued automatically, the S1 consolidates requests from the batteries and submits a consolidated requisition through the S4 to the class VI supply point.

(c) *Distribution.* Class VI supplies normally are picked up by the battalion S4 and distributed to the batteries in accordance with their requests, or as specified by the S1.

(7) Class VII.

(a) *Definition.* Class VII supplies consist of major end items. Major end items are a final combination of end products which are ready for their intended use; e.g., field artillery carriages, launchers, and vehicles.

(b) *Requests and requisitions.* The battalion S4 submits a requisition to the appropriate supply support echelon responsible for the end item being requested along with a turn-in of unserviceable equipment. If a like float item is available at the supply support echelon, it will be issued on a loan basis at the time the unserviceable item is turned in.

(c) *Distribution.* The battalion is notified when the major end item on requisition is received at the supply support echelon. The battalion S4 draws the item and issues it to the requesting battery. Any float equipment on loan is turned back at this time.

(8) Class VIII.

(a) *Definition.* Class VIII supplies consist of medical materiel, including medical-peculiar repair parts.

(b) *Requisitions and distribution.* The battalion medical section requisitions medical supplies and repair parts. The requisitions are submitted to the appropriate medical supply support echelon. The ambulance, or other evacuation vehicle, normally picks up requisitioned supplies at the medical supply support echelon for delivery to the battalion aid station.

(9) Class IX.

(a) *Definition.* Class IX supplies consists of repair parts less medical peculiar repair parts. Class IX supplies include all repair parts and components required for maintenance support of all equipment.

(b) *Requests and requisitions.* Repair parts and other maintenance supplies are issued on the basis of requests or by direct exchange.

(c) *Distribution.* Repair parts may be picked up by the requesting unit at the technical supply activity of the supporting direct support maintenance unit, or may be delivered direct to the unit.

(10) Class X.

(a) *Definition.* Class X supplies consist of materiel for support of nonmilitary programs, such as agricultural and economic development, used for civic action. Class X supplies are supplies not included in classes I through IX.

(b) *Requests and requisitions.* When a field artillery unit is engaged in civic action or similar projects, requests for class X items are submitted through the appropriate supply support echelon—normally through S5/G5 channels—for approval.

(c) *Distribution.* Class X supplies are picked up by the requesting unit at the appropriate supply support echelon and delivered to the project site.

3-18. Distribution

a. *General.* Supplies drawn by the battalion supply section are segregated for issue to the individual batteries. Class I supplies are distributed to the batteries according to the personnel strength. Other supplies are issued in accordance with the requisitions prepared by or for the batteries.

b. *Methods.* The battalion supply section supplies the batteries by one of two methods—supply point distribution or unit distribution. In supply point distribution, the battery sends transportation to a designated supply point to pick up the supplies. In unit distribution, the service battery delivers the supplies to the battery position. Unit distribution is normally used in the field artillery battalions.

c. *Records.* The battalion supply section maintains records that reflect the status of supply of the battalion. Ammunition records are maintained by the S4 or the battalion ammunition officer when a service battery is organic to the battalion.

3-19. Battalion Maintenance Section

The battalion maintenance section performs or supervises battery performance of scheduled periodic maintenance services and inspections of all vehicles, and insures the proper disposition of records and reports in accordance with the provisions of TM 38-750. The battalion maintenance section is responsible for the requisition, storage, and maintenance of records of all parts and supplies required for maintenance. Batteries usually submit their requisitions for parts to the battalion maintenance section for consolidation and submission to the supporting direct support maintenance unit. Using units may become the sole sources of maintenance during nuclear or rear area attacks. In some

Major classification	Description	Subclassification ¹
I	Subsistence.	A-Air (in-flight rations). B-Refrigerated subsistence S-Nonrefrigerated subsistence (less combat rations). C-Combat rations. ²
II	Clothing, individual equipment, tentage, organizational tool sets and tool kits, hand tools, and administrative and housekeeping supplies and equipment.	B-Ground support materiel. ³ E-General supplies. F-Clothing and textiles. M-Weapons. T-Industrial supplies. ⁴
III	POL: Petroleum fuels, lubricants, hydraulic and insulating oils preservatives, liquid and compressed gases, bulk chemical products, coolants, deicing and antifreeze compounds, together with proponents and additives of such products, and coal.	A-Air. W-Ground (surface).
IV	Construction: Construction materials to include installed equipment and all fortifications/barrier materials.	
V	Ammunition: Ammunition of all types, including chemical, biological, radiological, and special weapons and bombs, explosives, mines, fuzes, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items.	A-Air. W-Ground.
VI	Personal demand items (nonmilitary sales items).	
VII	Major end items: A final combination of end products which are ready for their intended use; e.g., launchers, tanks, mobile machine shops, and vehicles.	A-Air. B-Ground support materiel. ³ D-Administrative vehicles. ⁵ G-Electronics. K-Tactical vehicles. L-Missiles. M-Weapons. N-Special weapons.
VIII	Medical materiel, including medical-peculiar repair parts.	
IX	Repair parts (less medical-peculiar repair parts): All repair parts and components to include kits, assemblies and subassemblies, repairable and nonrepairable, required for maintenance support of all equipment.	A-Air. B-Ground support materiel. ³ D-Administrative vehicles. ⁵ G-Electronics. K-Tactical vehicles. L-Missiles. M-Weapons. N-Special Weapons. T-Industrial supplies. ⁴

¹ The ALPHA codes for subclassification of Classes II, VII, and IX represent materiel category designators used in supply management, with the exception of A (air) which is used throughout all classes of supply as applicable. ALPHA codes not used as materiel category designators have been assigned to the subclassifications of classes I, III, and V. The subclassification materiel designators (A through T) may be used in combination with the designated subclassifications, when appropriate and if desired, to definitize further a portion of a class of supply for planning purposes; e.g., use of class V AL to designate ammunition, air, missiles. Additional codes may be utilized by the Services to satisfy a specific requirement; for example, to designate repairable or nonrepairable high-dollar items or for other selective management purposes. This additional permissive coding is not to be utilized in lieu of that designated for the major classifications and subclassifications.

² Includes gratuitous health and welfare items.

³ Includes power generators and construction, barrier bridging, firefighting, petroleum, and mapping equipment.

⁴ Includes bearings, blocks and tackles, cables, chains, wire rope, screws, bolts, studs, steel rods, plates, and bars.

⁵ Commercial vehicles utilized in administrative motor pools.

Figure 3-5. Classes of supply.

cases, battery maintenance sections may be authorized or required to maintain their own prescribed loads of repair parts. The battalion maintenance support platoons of the Pershing and Sergeant battalions are unique in that they are tailored to the peculiar needs of the materiel organic to field artillery missile battalions.

3-20. Recovery and Evacuation of Vehicles

a. Instructions pertaining to battlefield recovery and evacuation of vehicles are contained in appropriate field manuals and are included in the unit SOP. Normally, battlefield recovery is accomplished by the battalion maintenance section. The maintenance section marches at the rear of the battalion column during movements; it makes roadside repairs that are beyond the capability of battery maintenance personnel, tows disabled vehicles to the march destination, and recovers all vehicles that fall out of the column.

b. Vehicles that cannot be repaired by the battalion maintenance section or by direct support contact teams are evacuated to the next higher maintenance support unit for repair. After repair, the vehicles are returned to the battalion. Usually, the battalion is responsible for evacuating vehicles to the next higher category of maintenance.

c. Vehicles which obviously cannot be repaired (i.e., burned or demolished vehicles) are not recovered by battalion maintenance personnel. If possible, these vehicles should be removed from the traffic pattern. The location and condition of these vehicles are reported to higher headquarters through logistic channels.

3-21. Battalion Personnel Section

a. *Divisional Field Artillery Battalion.* In

divisional field artillery battalions, personnel functions are performed by the division adjutant general and finance companies.

b. *Nondivisional Field Artillery Battalion.* In nondivisional field artillery battalions, personnel services and finance support are provided by nondivisional personnel service companies, and finance service organizations. The general functions performed by the organizations, and the responsibilities of the field artillery battalion are included in DA Pam 500-8, FM 12-5, and FM 14-3.

3-22. Battalion Ammunition train

a. The battalion ammunition train, under the command of the train commander, performs the ammunition (class V) supply and resupply functions for the battalion. The ammunition sections of the cannon batteries may be attached to the train, when necessary, to return to the ammunition supply point for resupply, or they may obtain their resupply from the train by exchange of vehicles. When a cannon battery is operating independently or under circumstances that preclude normal ammunition resupply, a section of the battalion ammunition train may be attached to the cannon battery.

b. Ammunition supply and resupply procedures and functions peculiar to field artillery missile and rocket batteries and battalions are contained in FM 6-61, FM 6-37, and FM 6-39.

c. Field artillery ammunition supply procedures include considerations of the basic load, authorized excesses, the available supply rate, the special ammunition load to include nuclear and chemical ammunition, resupply, reports and nuclear surety. These considerations are discussed in FM 6-20, ~~FM 9-6~~, and FM 100-10.

Section V. ~~THE ARMY ARTILLERY SECTION; THE HEADQUARTERS AND HEADQUARTERS BATTERY OF CORPS, DIVISION, AND GROUP; THE AVIATION BATTERY AIRMOBILE DIVISION; AND THE FA BATTERY, ARMORED CAVALRY SQUADRON~~

3-23. General

Paragraphs 3-24 through 3-30 show the organizations, staffs, and staff elements of the army artillery section, of the headquarters and headquarters battery for corps artillery; division artillery (infantry, armored, mechanized (infantry); and airborne); airmobile division artillery; the field artillery group; the aviation battery of the airmobile division; and the field artillery battery of the armored cavalry squadron.

3-24. Artillery Section, Field Army

a. The ~~artillery~~ section of a field army is authorized by TOE 51-1(). This section assists the army artillery officer in performing his duties as outlined in FM 101-5.

b. Figure 3-6 shows the organization of a type army artillery section.

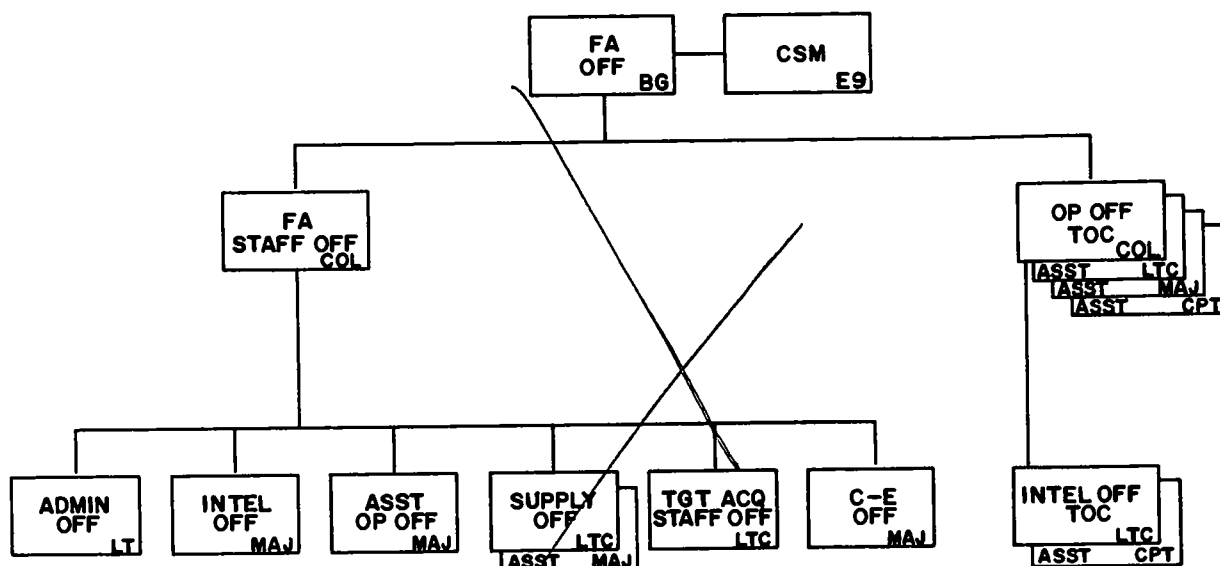


Figure 3-6. A type Army artillery section.

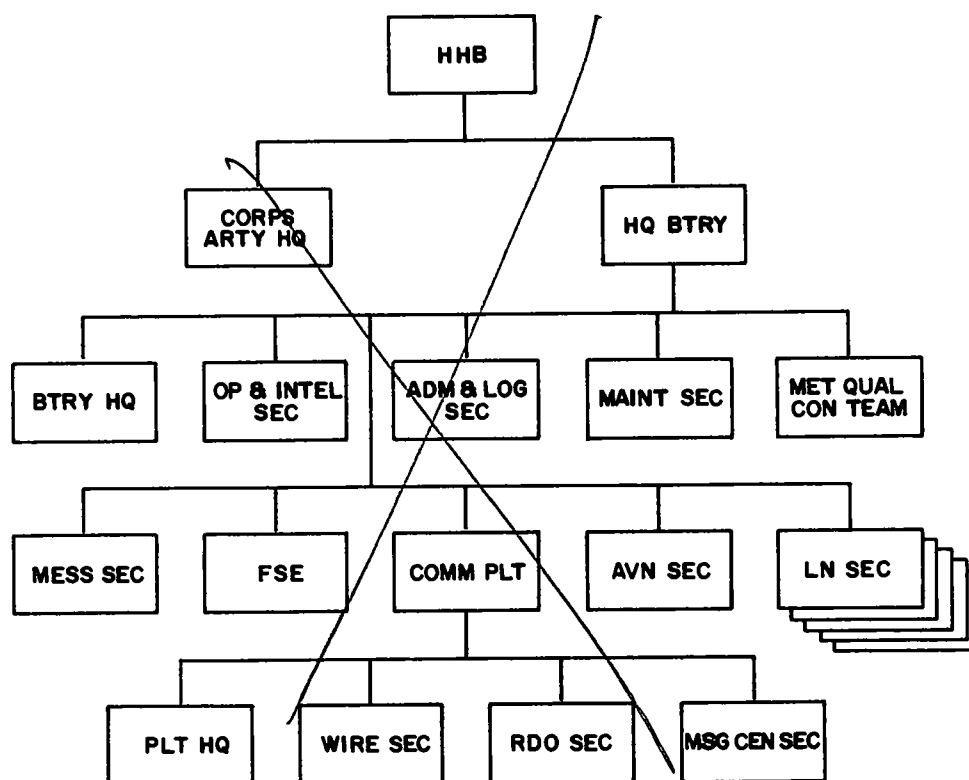
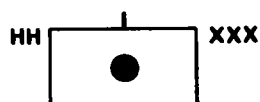


Figure 3-7. Organization of headquarters and headquarters battery corps artillery.

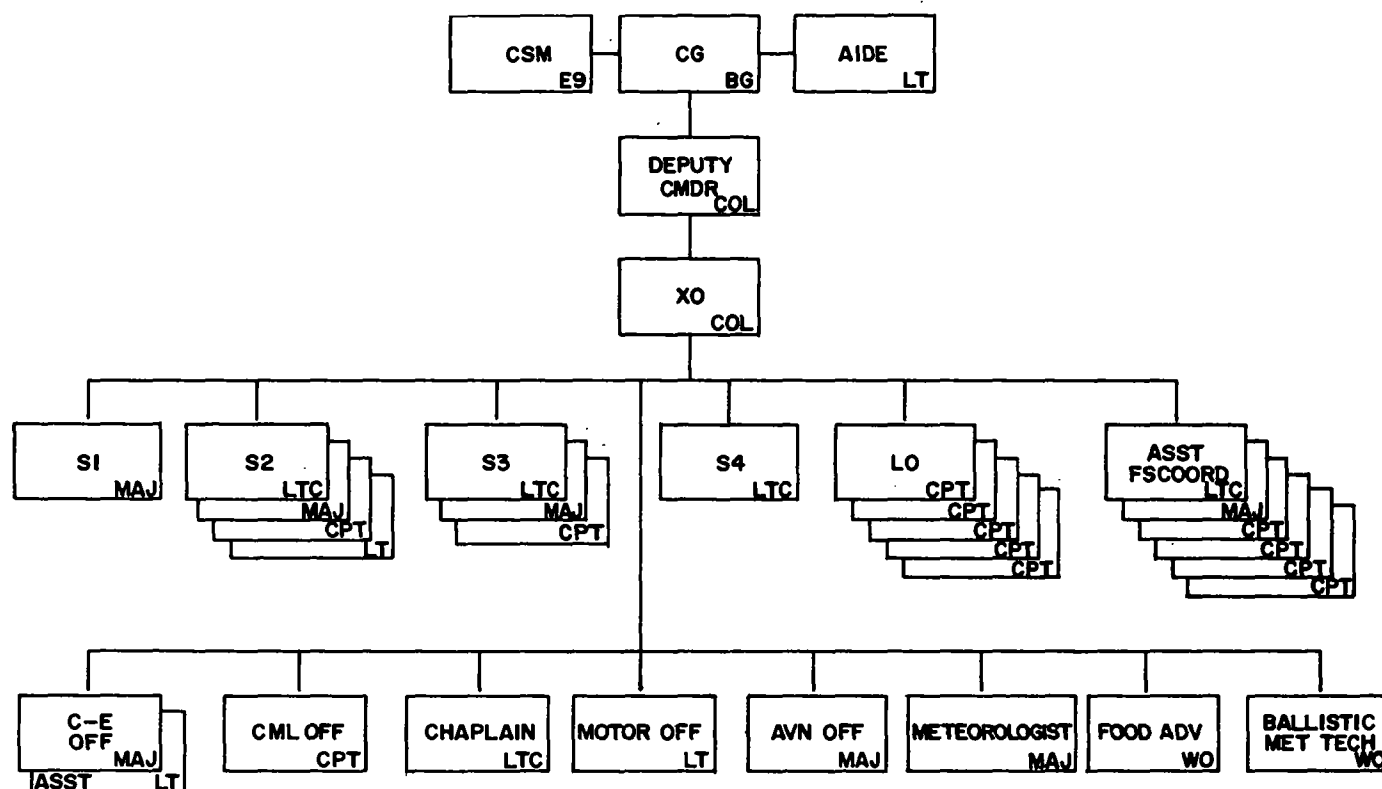


Figure 3-8. A type corps artillery staff.

3-25. Headquarters and Headquarters Battery, Corps Artillery

a. This battery is organized to provide tactical control and administrative supervision of assigned and attached field artillery units. The battery is organized under the TOE 6-501 series.

b. The battery provides the personnel of the fire support element (FSE) of the corps tactical operation center (CTOC).

c. Figure 3-7 shows the organization of the battery. Figure 3-8 shows a type corps artillery staff.

3-26. Headquarters and Headquarters Battery, Division Artillery (Infantry, Armored, Mechanized (Infantry), and Airborne Divisions)

a. This battery is organized to direct and coordinate operations of division artillery and attached units and to provide facilities for control of these units. The Tables of Organization and Equipment for this battery are as follows:

(1) TOE 6-100 series for Infantry Division Artillery.

(2) TOE 6-201 series for Airborne Division Artillery.

(3) TOE 6-302 series for Armored and Infantry (Mechanized) Division Artillery.

b. The battery provides the personnel of the fire support element (FSE) to the division tactical operations center (DTOC).

c. Figure 3-9 shows the organization of the battery. Figure 3-10 shows a type division artillery staff.

3-27. Headquarters and Headquarters Battery, Division Artillery (Airmobile Division)

a. This battery is organized to direct and coordinate operations of the airmobile division artillery and attached units, and to provide facilities for control of these units. The Tables of Organization and Equipment for this battery are the TOE 6-701 series.

b. Figure 3-11 shows the organization of the battery.

3-28. Headquarters and Headquarters Battery, Field Artillery Group

a. This battery is organized to provide tactical control and administrative supervision of attached field artillery battalions. The Table of Organization and Equipment for this battery are the TOE 6-401 series.

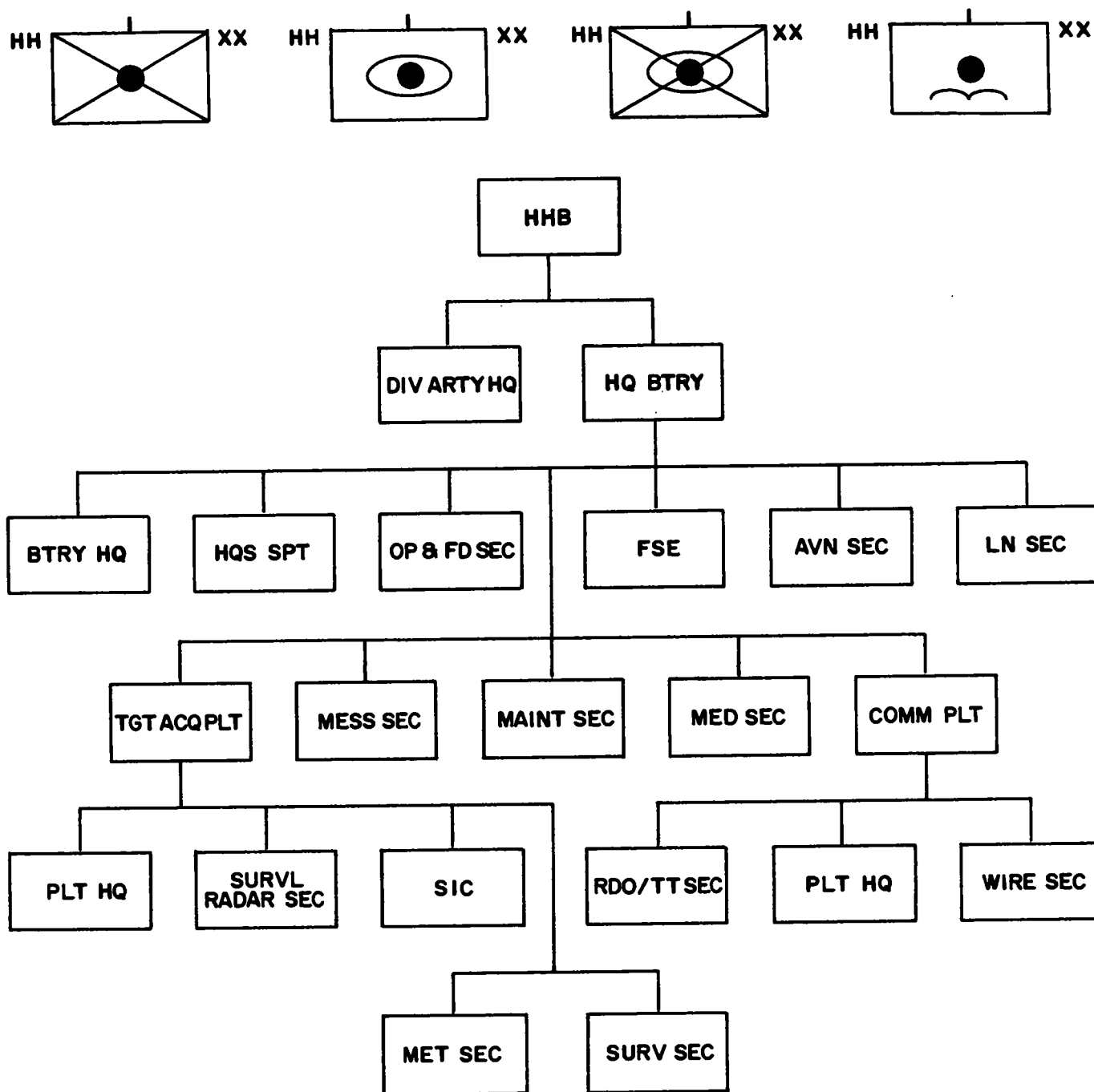


Figure 3-9. Organization of headquarters and headquarters battery division artillery (infantry, armored, mechanized, (infantry)), and airborne divisions.

b. Figure 3-12 shows the organization of the battery. Figure 3-13 shows a type field artillery group staff, and staff elements.

3-29. Aviation Battery, Division Artillery (Airmobile Division)

a. The mission of this battery is to increase the combat effectiveness of the airmobile division artillery by providing the division artillery and its elements with immediate, responsive aviation support.

b. The battery is not a firing battery. Its

helicopters can be armed for self defense by using the door weapons on the aircraft.

c. The battery is 100 percent air transportable in Army or Air Force aircraft. Capabilities of the battery include—

- (1) Continuous operations during visual flight rule (VFR) weather conditions.
- (2) Limited operations under instrument flight rule (IFR) weather conditions.
- (3) Aerial observation, reconnaissance, and surveillance of enemy areas.

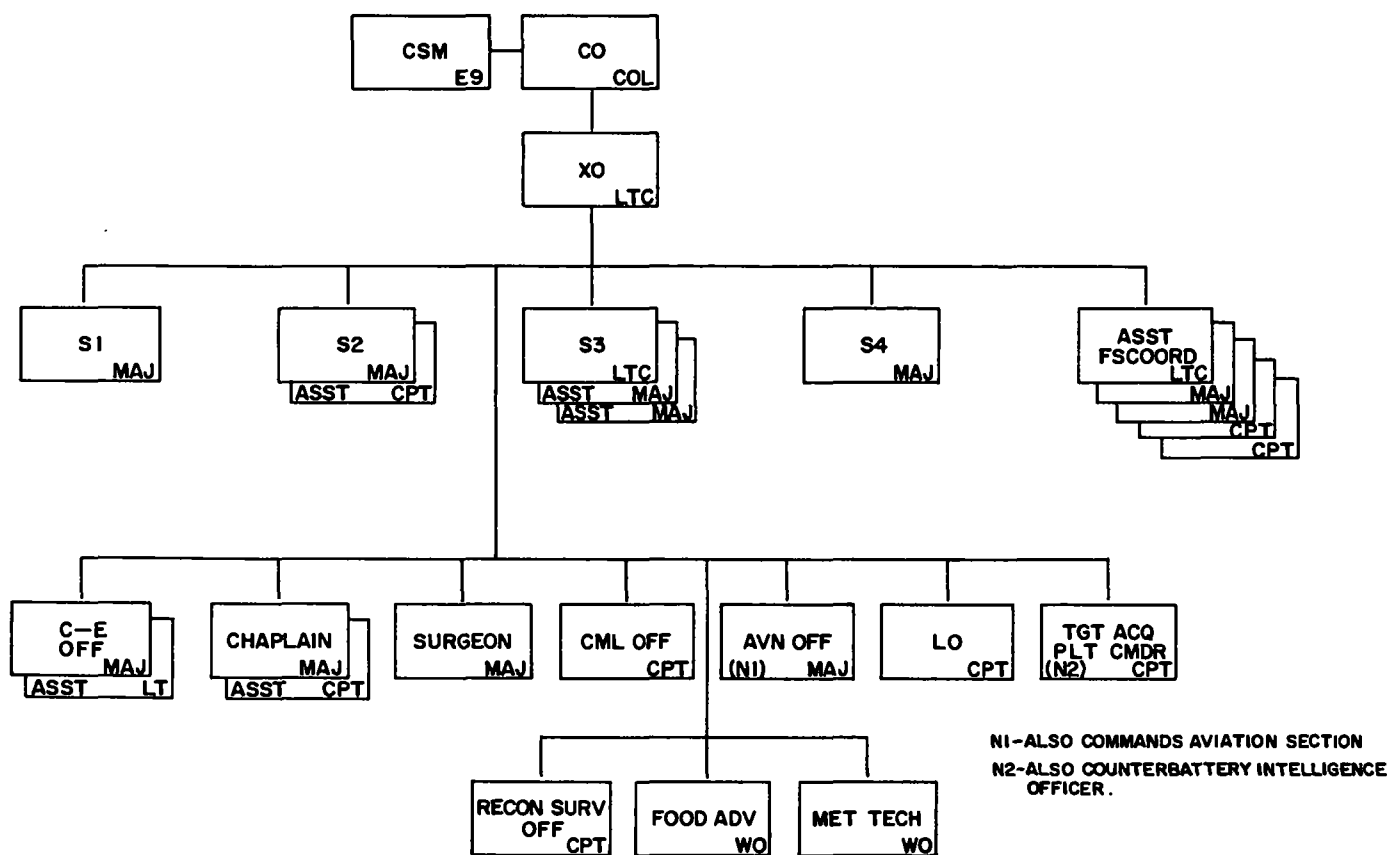


Figure 3-10. A type division artillery staff.

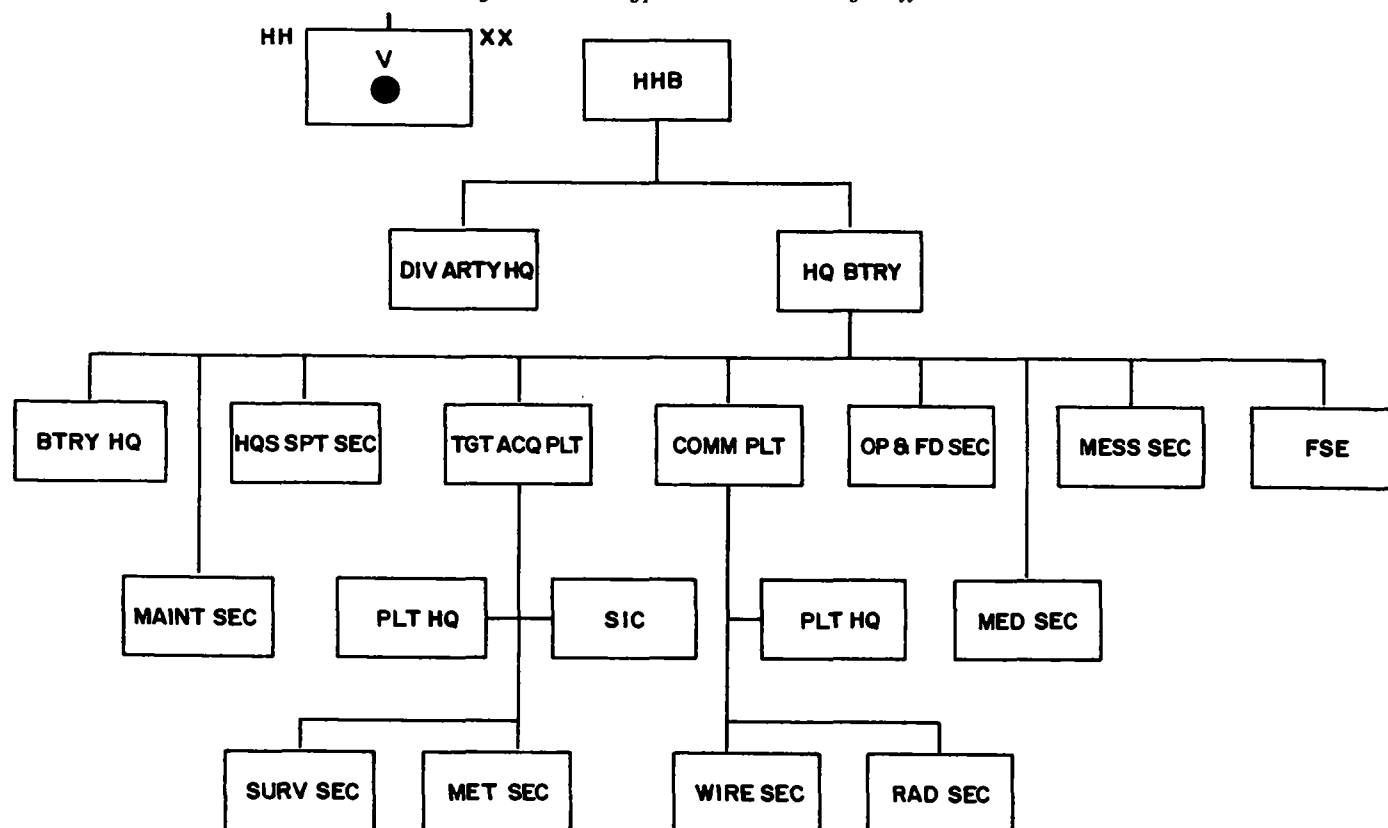


Figure 3-11. Organization of headquarters and headquarters battery, division artillery (airmobile division).

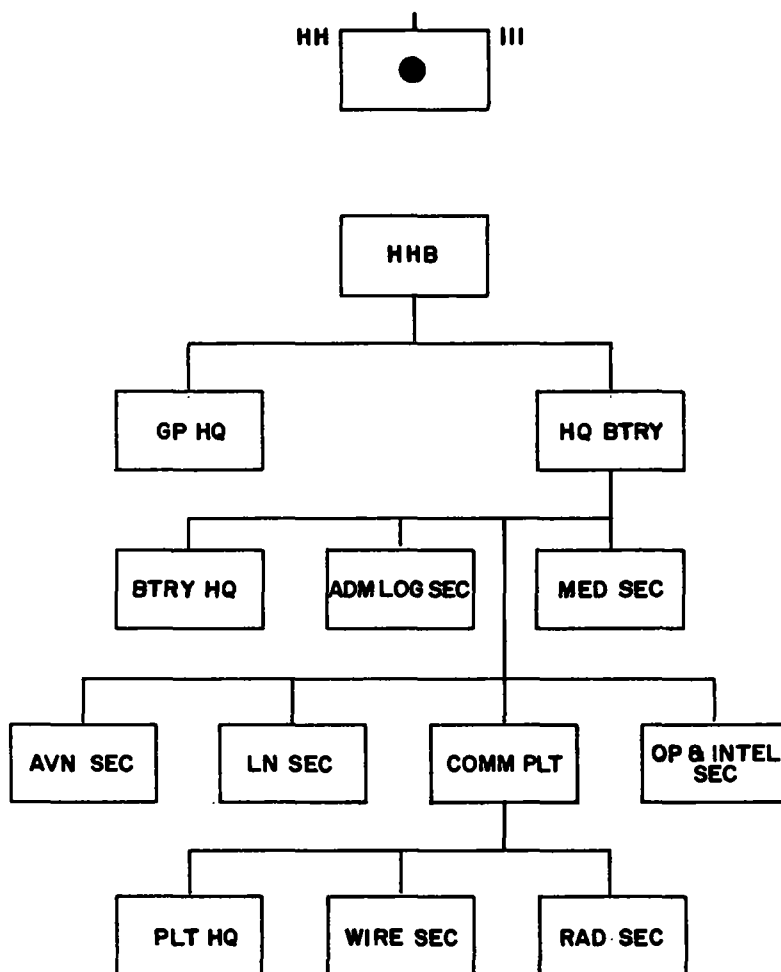


Figure 3-12. Organization of headquarters and headquarters battery, field artillery group.

(4) Adjustment of field artillery and other fire support.

(5) Assisting in terrain studies and locating, verifying, and evaluating targets.

(6) Command, liaison, and transportation.

(7) Aerial wire laying, radio retransmission, and psychological warfare support operations.

(8) Limited medical evacuation.

d. The Table of Organization and Equipment for this battery are the TOE 6-702 series. Aviation battery radio nets are shown in FM 6-10

and FM 61-84 (Part Three). Figure 3-14 shows the organization of the aviation battery.

3-30. Field Artillery Battery, Armored Cavalry Squadron, Armored Cavalry Regiment

a. This battery is organized, trained, and equipped to provide direct support for the armored cavalry squadron. The battery is organized under the TOE 6-37 series.

b. Figure 3-15 shows the organization of the battery.

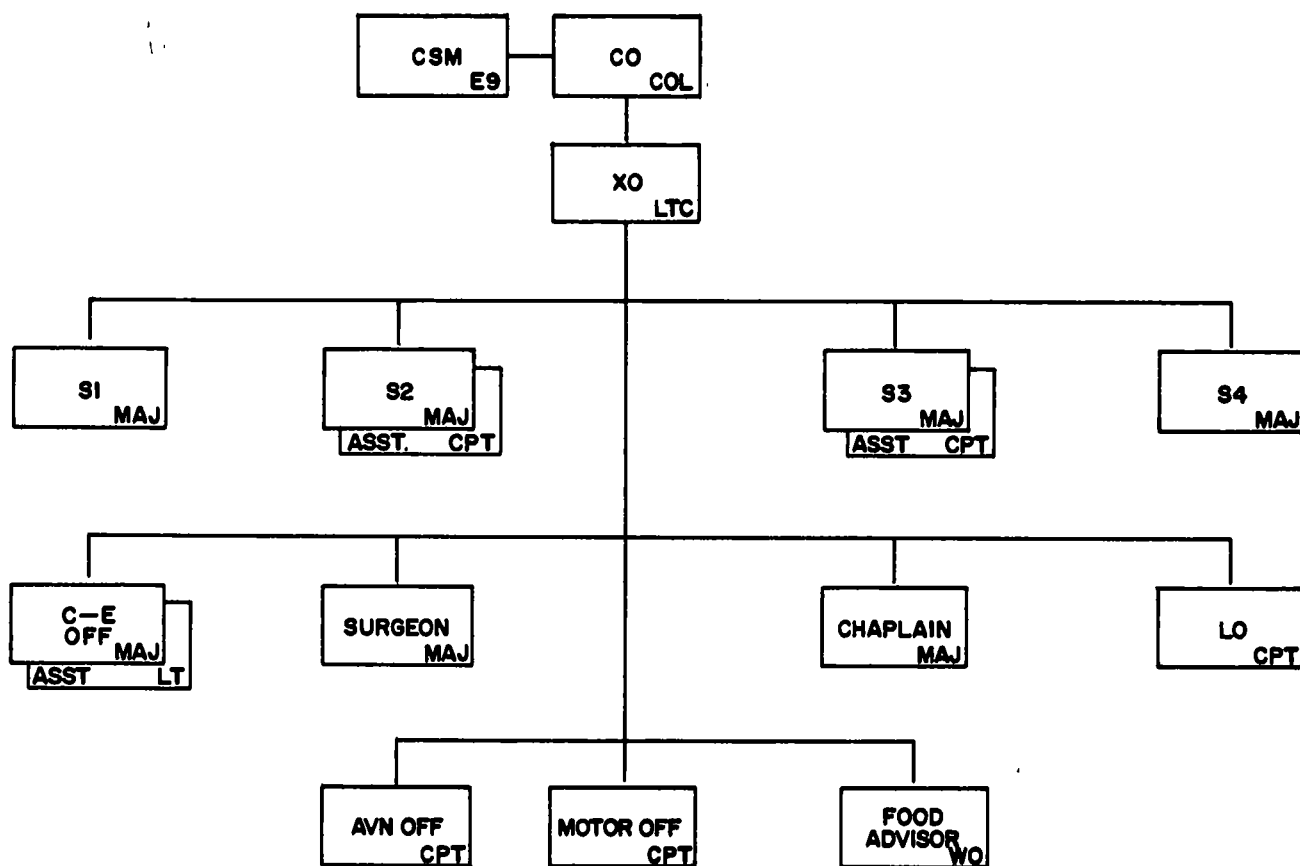


Figure 3-13. A type field artillery group staff.

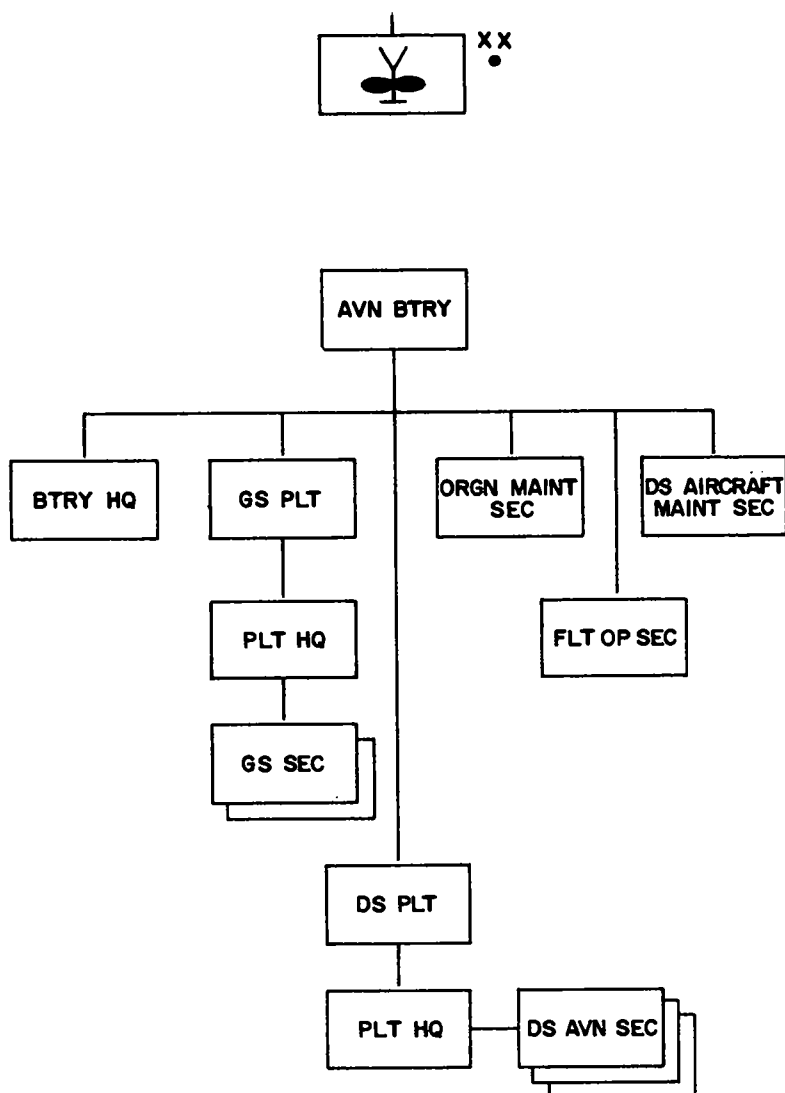


Figure 3-14. Organization of the aviation battery division artillery (airmobile division).

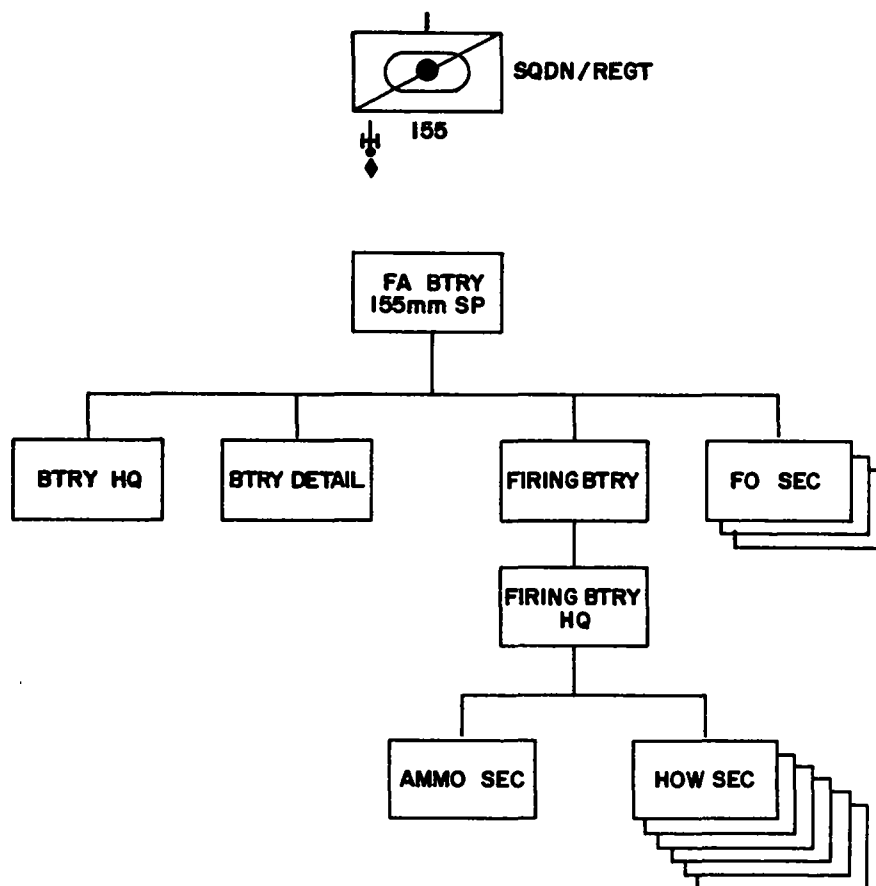


Figure 3-15. Field artillery battery, armored cavalry squadron.

CHAPTER 4

RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

Section I. GENERAL

4-1. Purpose and Scope

a. The purpose of reconnaissance, selection, and occupation of position (RSOP) is to assist the rapid and orderly movement of the field artillery battalion (battery) from a position area, an assembly area, or a march column into a position from which it can deliver the fire support required to accomplish its mission.

b. The principles and techniques set forth in this chapter are applicable to all field artillery cannon, missile, and rocket battalions and batteries. For additional information on RSOP for ~~other field artillery units, see the applicable field manual, e.g. for aerial field artillery, see FM 6-102.~~ *the cannon battery, see FM 6-50*

4-2. Reconnaissance

a. *General.* Field artillery reconnaissance is the examination of the terrain as a basis for the selection of advantageous locations for cannons, rockets, missiles, support installations, and personnel. Some of the factors considered during the reconnaissance are fields of fire, road networks, communication routes, location of friendly forces, active and passive defensibility, and communications and electronic security. The reconnaissance should be planned, and the reconnaissance party should be limited to the personnel, vehicles, and equipment actually required.

b. *Types of Reconnaissance.*

(1) *Map reconnaissance.* Any reconnaissance should begin with a map inspection. Potential locations and routes can be chosen and obviously unsuitable ones are immediately eliminated. A reconnaissance based only on map inspection has certain limitations; terrain features may have been changed or altered since the map was compiled and the daily variations in surface condition cannot be determined. A map reconnaissance without any supporting information should only be used

when there is no alternate means available. Aerial photographs should be used to supplement maps because they are usually more recent, and provide more detail, and present a clearer picture of current conditions. When time does not permit a ground or aerial reconnaissance, a map reconnaissance may be substituted.

(2) *Ground reconnaissance.* The best method of positively determining the suitability of positions and routes is to travel over the territory. The true condition of the ground is especially critical if the surface has been affected by enemy action and weather conditions.

(3) *Air reconnaissance.* If time or the situation do not permit a ground reconnaissance, the next best method is an air reconnaissance, preferably by helicopter. Air reconnaissance is fast and not restricted by terrain obstacles. The information gained, however, is not as detailed as a ground reconnaissance since terrain features or the true surface condition may not be distinguishable or may appear different from the air.

4-3. Selection of the Position

The factors affecting the selection of position areas are the mission, terrain, weather conditions, type weapon with which the unit is armed, and the tactical situation. Position areas which afford electronic security, concealment, and defilade, sufficient space to disperse battery installations, and terrain suitable for defense of the unit are desirable. The essential characteristic of a position, however, is that it permits the unit to accomplish its mission.

4-4. Occupation of the Position

The occupation of the position area should be orderly, quiet, and in conformance with the unit SOP. Speed of occupation is obtained by training and a well planned reconnaissance and selection of that position.

Section II. STEPS IN RSOP

4-5. General

Placing a battalion in position involves several tasks which are performed simultaneously or in sequence. The manner of accomplishing these tasks varies with the mission, the time available, and the type of battalion. A self-propelled field artillery battalion, when operating as part of a task force, will frequently occupy positions (often from march column) with little previous reconnaissance. In this case, prompt delivery of fire takes precedence over all other considerations. Airborne field artillery must make its reconnaissance and selection of initial positions from photographs or maps, since the airborne field artillery commander normally has no prior opportunity to see or point out positions on the ground. Upon arrival in the drop or landing zone, the batteries must be prepared to go into action by piece, if necessary, consolidating and organizing their positions as the situation permits. A standing operating procedure (SOP) for the reconnaissance, selection, and occupation of position is necessary to expedite rapid and efficient emplacement of installations. In all cases, the general principles apply, varying only in their application.

4-6. Sequence of Events in RSOP

The sequence and procedures for an RSOP may include the following steps:

- a. Receipt of orders (own initiative for DS field artillery battalion commanders).
- b. Planning the reconnaissance.
- c. Conference with the supported or reinforced unit commander.
- d. Reconnaissance for the release point, battery positions, observation posts, the counter-mortar radar position, and meteorological station (when appropriate), the command post, the aid station, and routes and selection of the actual locations on the ground for the elements of the battalion.
- e. Formulation of a plan for occupation of the selected positions.
- f. Issuance of orders to carry out the plan.
- g. Preparation for occupation—survey, installation of communications, and route marking.
- h. Movement of the battalion to the position area.
- i. Occupation and organization of the position.
- j. Location of a helicopter pad, normally unmarked until just prior to use.

when under battery control

Section III. RECONNAISSANCE, FIELD ARTILLERY BATTALION

4-7. Planning a Reconnaissance

a. *Planning and Tasking.* Reconnaissance enables the battalion commander to make decisions on which to base his orders for the occupation. The reconnaissance tasks which the commander assigns to members of his party depend on the time available, the size of the area to be covered, the size of the party, and the personal desires of the commander. Shown below is an example of reconnaissance tasks that may be performed by members of the battalion commander's party. The battalion commander may desire to make an initial reconnaissance of the battery positions and routes by means of aircraft.

<i>Reconnaissance or task</i>	<i>Performed by—</i>
Selects the registration point and initial targets.	S3 and/or reconnaissance and survey officer.
Formulates the plan of observation including locations of observation posts and areas of responsibility and general radar areas when applicable.	S2.

<i>Reconnaissance or task</i>	<i>Performed by—</i>
Formulates the survey plan.	Reconnaissance and survey officer.
Selects position areas and routes.	Reconnaissance and survey officer or S3 (battery commander, if available).
Formulates communication plan.	Communications-electronics staff officer.
Selects command post location.	Headquarters battery commander and/or communications-electronics officer.
Selects countermortar radar site. <i>when applicable.</i>	Radar technician and/or section chief.
Selects the meteorological station location.	S2.
Selects aid station location.	Headquarters battery commander and/or representative of the medical section.
Checks camouflage and security.	S2.
Recommends perimeter defense and unattended ground sensor locations.	S2.
Selects starting point (SP) and release point (RP).	S3.

b. Conference With Supported or Reinforced Unit Commander. On receiving a direct support or reinforcing mission, the battalion commander establishes liaison with the supported or reinforced unit. If he has been assigned a position area by the higher commander, he starts his reconnaissance for battery positions, observation posts, and other installations at once. If he has not been assigned a position area, he may have to confer with the supported or reinforced unit commander (if available) and the battalion CBR officer before completing his reconnaissance. Usually, the battalion commander starts his reconnaissance immediately and chooses tentative locations for various installations, making the final decision following his conference with the supported or reinforced unit commander.

c. Battalion Commander's Party. The battalion commander's party consists of the personnel and equipment needed to assist the commander in his reconnaissance, the formulation of his plan, the issuance of orders, and the preparation for the occupation of position. The composition of the party will vary according to the type of battalion, the mission, and the restrictions that may be imposed. In general, it is desirable that the commander include in his party the S2, the S3, the communication officer, the target acquisition or survey officer, and a messenger. If possible and appropriate, he may take with him any or all of the following:

- (1) Battery commanders and their parties.
- (2) Survey personnel.
- (3) Wire laying vehicles and personnel.
- (4) The ammunition train commander.
- (5) A representative of the medical detachment.

d. Battalion Commander's Instructions.

(1) *Action prior to leaving the area.* Before leaving the bivouac or assembly area, the battalion commander briefs the battalion executive officer and issues orders to expedite the occupation of the position. Depending on his current information, he may issue orders concerning—

(a) Movement of elements of headquarters battery, staff officers, and battery commanders and their parties to a location from which they can be brought forward quickly to receive the battalion order.

(b) Probable routes, start points, release points, time of movement, and use of route markers.

(c) Prearranged radio codes for use during movements.

(d) Probable order of march.

(2) *Instructions for reconnaissance party.* After briefing the selected staff officers, the battalion commander assembles the members of his reconnaissance party, briefs them on the situation, and issues the necessary instructions to include the requirement for chemical or radiological reconnaissance if necessary. He points out, on the ground or on a map, the general location for the position area and the tentative general location for each installation. If he plans to make a personal reconnaissance, he designates the time and place where he will issue his orders. If he assigns tasks to members of his party, he designates the time and place for the reassembly of the party.

e. Map Reconnaissance. Planning should be coordinated with the supported or reinforced unit before the start of the march. From a map reconnaissance, possible position areas and observation posts along the route are marked on maps and/or photographs. Manmade objects and terrain features that can be identified from the ground and can serve as control points and future reference points are marked with numbers. Phase lines may also be used to facilitate instructions. This procedure allows the marching unit to have prior knowledge of potential positions before the march commences.

4-8 . Executing the Reconnaissance

a. Route Reconnaissance. Air and forward observers, liaison officers, communications personnel, and survey parties are primary sources of information regarding the availability and conditions of routes within the zone of advance. Route reconnaissance parties report on the number of route markers needed, the strength and condition of bridges, and the possible presence of minefields. When the route of displacement is selected the route reconnaissance party should be prepared to clear and mark routes through minefields.

b. Reconnaissance of the Position. The battalion commander seldom performs all the operations of the reconnaissance personally. While the members of his party are performing their assigned reconnaissance duties, the commander may confer with the supported or reinforced unit or he may make a general terrain evaluation of the entire area to be occupied. During battalion operations, the commander, a staff officer, or the battery commanders make a reconnaissance of position areas prior to the arrival of the batteries. The battalion commander continues the reconnaissance and issues the orders necessary to complete the oc-

cupation. The selection of a location for the command post is influenced by the locations selected for the battery positions, the location of the command post of the supported unit (if known), and the situation. Radio is used for communication until wire circuits are installed.

c. Position of Reconnaissance Party in March Column.

(1) During the march with a supported combat unit, a reconnaissance party from the supporting field artillery normally marches with the advance elements of the column. When required, the chemical detection and radiological survey party of the battery CBR team is positioned with the forward element. The officer in charge of the field artillery reconnaissance party reconnoiters the position areas which have been previously designated and reports his findings to the battalion commander. In addition, commanders may use aircraft for reconnaissance and security during a march. Within a supporting field artillery battalion, battery

commanders and their parties may march at the head of the artillery column.

(2) Field artillery commanders, accompanied by a reconnaissance party, usually precede their units when they are part of a surface march column of a supported combat organization. Depending on his mission and knowledge of the situation, the artillery commander reconnoiters positions along the route as necessary. Frequently, the commander's knowledge of the situation will allow him to proceed directly to the position area, select the positions, and order the units into them.

d. Continuous Reconnaissance. The principles of reconnaissance and selection of positions for a displacement are in general the same as for an initial occupation. The battalion (battery) commander should continuously reconnoiter in his zone for positions, observation posts, and routes to meet any requirement. When time permits, survey control is carried forward or to the rear, and communication is installed before the displacement.

Section IV. SELECTION OF THE BATTALION POSITION

4-9. General

The term "battalion (battery) position area" is defined as that area occupied, or to be occupied, by the battalion (battery) with its elements disposed to provide fire support for the supported (maneuver) force. Position areas designated in orders, on maps, or on overlays indicate the area within which the weapons must be placed but do not constitute a rigid restraining line for all elements of the battalion (battery). Normally, division field artillery cannon battalions with a mission of direct support have priority for positions in the division area.

4-10. Classification of Positions

Field artillery positions are classified tactically as *primary*, *alternate*, and *supplementary*. They are defined as follows:

a. A *primary* position is a position from which the battery intends to accomplish its tactical mission. Plans should be made to organize and improve the primary position for permanent occupancy although the tactical situation may require displacement at any time.

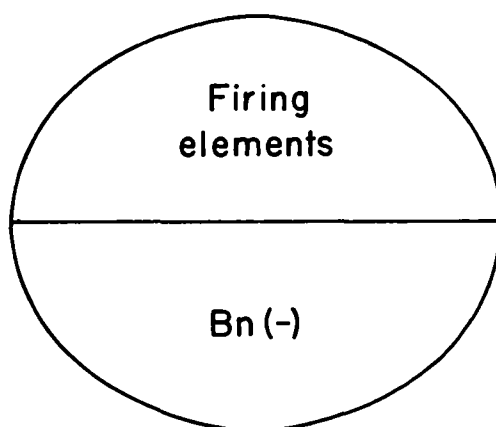
b. An *alternate* position is a position to which the battery moves when the primary position becomes untenable or unsuitable for carrying out the assigned task. The alternate position must meet all the requirements of the primary position so that the battery can continue to

fulfill its original task. The alternate position must be close enough to the primary position to permit rapid displacement, but distant enough to prevent its being rendered untenable by the same action that affects the primary position. At least one alternate position should be selected for each primary position, and all preparations necessary for occupation should be made consistent with the time available.

c. A *supplementary* position is a position to which the elements of the firing battery (element) may move to attack targets which cannot be fired on from the primary or alternate position or from which registrations may be conducted when secrecy is essential. Supplementary positions may be constructed to improve the direct support capabilities of the unit. Roving gun positions are considered supplementary firing positions.

4-11. Position Areas in the Offense

a. Field artillery positions should be selected well forward towards the FEBA. The generally accepted distance behind the FEBA is approximately one-third of the maximum range capability of the field artillery weapons that are supporting the attack. This distance is used in order to avoid early and untimely displacement. When circumstances warrant, the battalion may occupy and organize the position



Headquarters and service elements and firing elements in a common perimeter. This area includes the firing batteries of a cannon or missile battalion. The area includes firing positions. Alternate and supplementary positions are not shown.

Figure 4-1. Battalion position area—method 1.

without firing from it prior to the attack. Registration, interdiction, and harassing fires may be delivered from supplementary positions, and all fires from the primary position may be withheld until the preparation is fired or when the attack starts.

b. Missile and rocket units will normally be employed considerably less forward than cannon units. The precise positioning of missile and rocket units depends upon the nature and scope of the action being supported, and the range and warhead capability of the system employed.

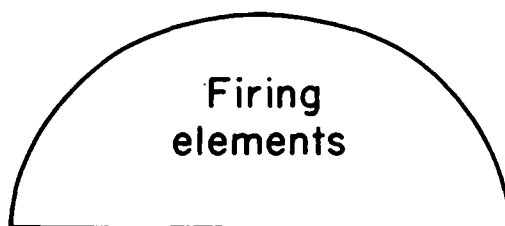
4-12. Position Areas in the Defense

In the defense, artillery positions should be echeloned in depth to provide flexibility of fire and to insure continuity of support in the event the enemy makes a penetration which requires field artillery units to displace to the rear. All division cannon artillery and ~~aerial artillery~~ (if available) should be capable of firing immediately in front of the forward edge of the battle area (FEBA). Direct support artillery battalions should be able to provide close support for the forward companies and for the primary positions of the reserve companies of the maneuver element being supported. Maximum use of range capabilities should be made from primary positions to provide longer range fires. Forward supplementary positions from which to provide longer range fires forward of the

combat outpost (COP) should be selected. Supplementary positions should be selected to the rear to provide fires in depth within the battle area. Units with a nuclear capability are positioned laterally and in depth to provide the most effective continuous support. Alternate positions should be selected and prepared. Registration and harassing and interdiction (H&I) fires may be delivered from supplementary positions to make it more difficult for the enemy to detect the primary positions. Division artillery cannon units, 105mm and 155mm, are normally required to provide final protective fires (FPF) for the defending forces. In nuclear war or threat of nuclear war, batteries should be prepared to split into three or two howitzer/gun platoons, e.g., battery minus and platoon plus. Headquarters will also establish two command posts. Nuclear capable units may also establish special single weapon positions keyed particularly to nuclear warhead delivery.

4-13. Methods of Positioning Artillery Units

a. *General.* There are four general methods of deploying field artillery units in position areas. These methods are applicable to all divisional field artillery battalions and to nondivisional field artillery cannon, rocket, and missile battalions. Each method has advantages and disadvantages. The value of a particular method depends on the type of unit, the situation, the mission, and the capabilities of the enemy. The



Headquarters and service elements and firing elements in separate perimeters. The firing elements perimeter includes primary firing positions. Alternate and supplementary positions are not shown.

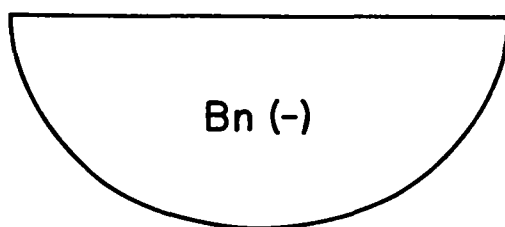


Figure 4-2. Battalion position area—method 2.

methods can be modified and combined to meet the requirements of each situation.

b. The four methods of positioning artillery units are as follows:

(1) *Method 1.* In method 1, the battalion occupies a position area (fig 4-1). The position area always includes the firing positions. The firing elements and headquarters and service elements are within the same perimeter. The firing elements are positioned, and every feasible action is taken to insure that the time required to prepare for and fire a mission is kept to a minimum. The firing elements or other elements of the battalion displace as required by the tactical situation. The battalion commander selects or recommends alternate and supplementary positions to which the battalion or elements of the battalion can displace.

(a) The principal advantages of method 1 are as follows:

1. The problem of command, administration, messing, survey, communications, and local security are simplified.

2. The time and effort required for resupply of ammunition to the firing sections are reduced.

3. Reaction time and the ability to meet firing schedules are improved.

(b) The principal disadvantages of method 1 are as follows:

1. Concentration of personnel, vehicles, and weapons in one area assists the enemy in detecting the position.

2. A single nuclear weapon could destroy or neutralize the entire battalion.

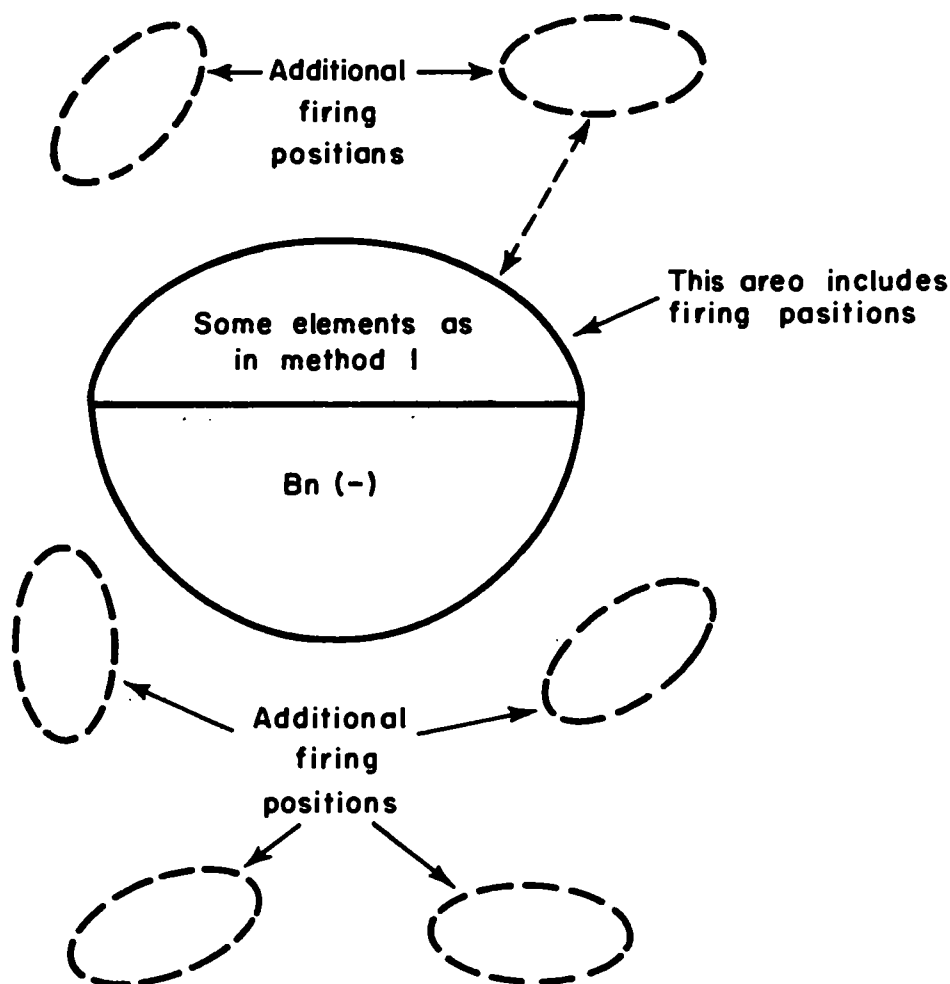
3. Displacement of the entire battalion may be necessary if the position is discovered.

4. Repeated firing of weapons from the same positions may disclose the battalion's location.

(2) *Method 2.* In method 2, the battalion occupies a position area (fig 4-2). The position area always includes the firing positions. The firing elements and the headquarters and service elements are in separate perimeters. However, as in method 1, firing elements are positioned, and everything possible is done to insure that the time required to prepare for and fire a mission is kept to a minimum. The firing elements or other elements of the battalion displace as required by the tactical situation. The battalion commander selects or recommends alternate and supplementary positions to which the battalion or elements of the battalion can displace.

(a) The principal advantages of method 2 are as follows:

1. Locating the firing elements and the headquarters and service elements in separate perimeters reduces the possibility of the battal-



Headquarters and service elements and firing elements in a common perimeter. Fire missions are normally accomplished from firing positions outside the perimeter, such positions are occupied only long enough to complete the fire mission. Alternate and supplementary positions are not shown.

Figure 4-3. Battalion position area—method 3.

ion being destroyed or neutralized by a single nuclear weapon.

2. Enemy action against one element of the battalion may not require displacement of the entire battalion.

3. Deploying the battalion elements in more than one area makes enemy detection of the entire battalion more difficult.

(b) The principal disadvantages of method 2 are as follows:

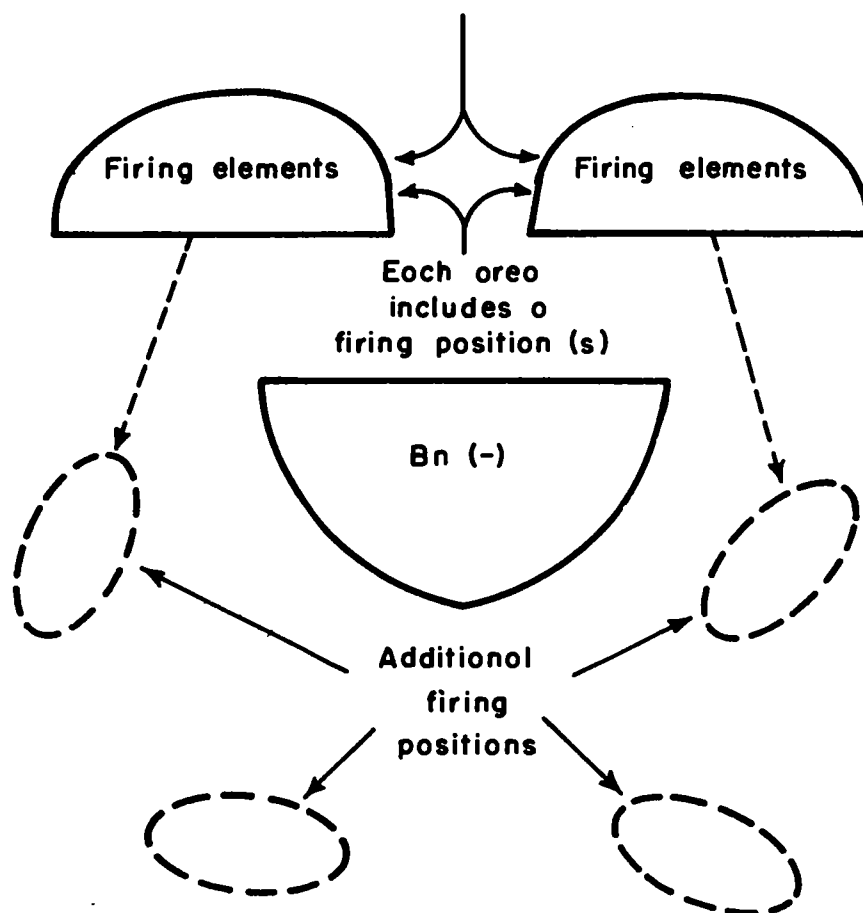
1. Command, administration, messing, survey, communications, and local security are more complex than in method 1.

2. The time and effort required for ammunition resupply to the firing sections are greater than in method 1.

3. Repeated firing of weapons from the same position may disclose the locations of the positions.

(3) *Method 3.* In method 3, the battalion occupies a position area (fig 4-3). The firing elements and the headquarters and service elements are within the same perimeter. Priority is given to the establishment of unoccupied firing positions outside the common perimeter. These positions are selected to provide the desired fire capabilities. Time permitting, a firing position outside the common perimeter is used for firing a mission. The firing element occupies the position only long enough to complete the fire mission and then returns to the battalion position area. Firing positions in the

Each of these areas includes one or more firing sections and may include a battery. The number of these occupied areas can be varied to meet the needs of the unit.



Headquarters and service elements and firing elements in separate perimeters. The firing element occupies another firing position on completion of a fire mission.

Figure 4-4. Battalion position area, method 4.

battalion position area are used only when conditions make it infeasible to fire the missions from positions outside the area. The firing elements are positioned, and every possible action is taken to insure that the time required to prepare for and fire a mission from the battalion position area is kept to a minimum. The firing elements or other elements of the battalion displace as required by the tactical situation. The battalion commander selects or recommends alternate and supplementary positions to which the battalion or elements of the battalion can displace.

(a) The principal advantages of method 3 are as follows:

1. Since elements of the battalion are together most of the time, command, adminis-

tration, messing, and local security are simplified.

2. Enemy detection of the firing positions outside the battalion position area does not disclose the location of the remainder of the battalion.

3. Vacating the firing position upon completion of fire missions reduces the possibility of effective counterbattery fire against the firing elements.

(b) The principal disadvantages of method 3 are as follows:

1. Achieving the maximum rate of fire of a cannon artillery battalion is difficult.

2. A single nuclear weapon delivered on the battalion position area could neutralize the entire battalion.

3. Survey and communications are more difficult than in methods 1 and 2.

4. Firing elements may be detected during displacements.

5. Lack of suitable position areas, time, and routes may prevent use of this method.

6. The requirement for providing sustained fire may prevent use of this method by cannon artillery battalions.

7. If the battalion is required to fire from positions within the common perimeter, all the disadvantages of method 1 will apply to this method.

(4) *Method 4.* In method 4, the battalion occupies a position area (fig 4-4). The firing elements and the headquarters and service elements are in separate perimeters. The number of areas occupied by the firing elements can be varied to meet the needs of the unit. One or more firing sections are located in each firing position. Additional firing positions are selected as necessary to provide the desired fire capabilities. The firing elements initially are located outside the headquarters and service perimeter(s). Upon completion of a fire mission, the firing element moves to another firing position. The firing sections are positioned, and every possible action is taken to insure that the time required to prepare for and fire a mission is kept to a minimum. The firing elements or other elements of the battalion displace as required by the tactical situation. The battalion commander selects or recommends alternate and supplementary positions to which the battalion or elements of the battalion can displace. Rocket and missile units normally use method 4.

(a) The principal advantages of method 4 are as follows:

1. Dispersion of battalion elements provides the battalion with a high degree of passive defense against nuclear attack.

2. Enemy action against one element of the battalion may not require displacement of the entire battalion.

3. Dispersion of battalion elements makes enemy detection of the entire battalion more difficult.

(b) The principal disadvantages of method 4 are as follows:

1. Command, administration, messing, and local security are more complex than in the other methods.

2. Survey and communications are more difficult than in methods 1 and 2.

3. Achieving the maximum rate of fire of the battalion is difficult.

4. Firing elements may be detected during displacements.

5. Lack of suitable position areas, time, and routes may prevent use of this method.

6. The requirement for providing sustained fire may prevent the use of this method because considerable time and effort are required to resupply ammunition.

4-14. Locating and Displacing Elements

a. When any of the methods described in paragraph 4-13 are used, the headquarters and service elements may be located together or separately, depending on the desires of the battalion commander or on instructions from the division (or corps) artillery commander.

b. The authority to order intra-battalion displacement of the type peculiar to methods 3 and 4 usually rests with the battalion commander. The authority to order displacement to alternate and supplementary positions is an inherent aspect of the responsibilities of tactical missions (FM 6-20).

c. Field artillery units must keep the appropriate fire support coordination center (FSCC) and fire support element (FSE) informed of the location(s) of all firing positions.

4-15. Observation Posts

The battalion observation posts (OP) are located to give the best possible coverage in width and in depth. The primary consideration in locating observation posts (OP) is to insure complete observation over the field artillery battalion's entire zone of fire. Additional discussion of observation is discussed in detail in paragraphs 8-7 through 8-10.

4-16. Radar Positions

a. The field artillery commander designates the locations of the radar position area. The S2 advises the commander on the location of the radar position area. The field artillery commander designates an area large enough to permit selection of the actual radar site based on technical considerations affecting operation of the radar.

b. The principal considerations governing the selection of a radar position area are maximum coverage of the zone of action of the supported unit, the technical capabilities and limitations of the radar set, and integration of the radar's zone of search with the zones of search of other radars as directed by the higher artillery commander.

c. In the offense, the radar position should be well forward to avoid early displacement. In the defense, the general location of the radar position may be prescribed by the higher artillery commander to provide depth to the radar operations of the force. The proximity of the radar position to the area of search is determined by the technical limitations of the equipment. Other considerations in the selection of the position, such as security, cover, concealment, and communications, are the same as those in the selection of a firing battery position (para 4-7 and 4-8).

Section V. DISPLACEMENTS

4-18. General

Displacements normally include reconnaissance, selection, and occupation of position. A field artillery unit must be prepared to deliver continuous supporting fire. Therefore, movement of the unit must conform to the plan of the supported or reinforced unit. The movement may be deliberate, or it may be hasty; for example, a hasty RSOP to support a fast moving attack. As in other types of RSOP, a standing operating procedure, a well-indexed terrain map, continuous fire planning, and liaison with the supported or reinforced unit are necessary to the success of a movement.

4-19. Planning the Movement

a. *General.* Planning for displacement should be continuous in order to insure fire support during an attack or during a retrograde movement. The method of displacement is the key planning factor.

b. *Special Factors.* Special planning factors usually include the following:

(1) When the battalion is displaced as a unit, the commander arranges for the transfer of his fire support responsibilities to another unit or units during the displacement.

(2) The ability to maintain communications with fire support (liaison) officers and forward observers, and the characteristics of the terrain and tactical situation influence the distance and frequency of displacements.

(3) As a general rule, the distance of displacement should be at least one third the maximum range of the cannons employed by the displacing cannon artillery. Rocket and missile units displace based on guidance contained in appropriate field manuals for the equipment involved.

(4) Directional control may be brought into

4-17. Orders for the Occupation

Based on his reconnaissance, reports from members of his party, and the scheme of maneuver of the supported force or the plans of the reinforced unit, the battalion commander completes his plan. He then issues the battalion order to his party and his staff. The order is usually issued orally and in fragmentary form. The battalion commander designates the release point in his order. A representative is placed in charge of this point until the executive officer arrives.

the battery areas by means of traverse, astrometric observation, or other artillery survey techniques. It is desirable to have fifth order horizontal and vertical control in the firing position. The chart location of the firing positions are obtained from a map and are used until better survey data become available.

(5) Field artillery missile and rocket artillery units require precise survey control at the firing position. Directional requirements are more stringent for these units than for cannon units, because of the longer range capabilities of the missiles and rockets, and because each missile and rocket launching is "fire for effect." The accuracy requirements vary with the different missile and rocket systems.

(6) In a forward displacement, the battalion commander usually conducts the reconnaissance and selection of position. In a rearward displacement, the battalion executive, assisted by a reconnaissance party, may perform the reconnaissance and selection of position while the commander remains with those elements of the battalion still in position or goes where the situation is most critical.

(7) When two or more field artillery battalions, not in a battalion group, displace over the same route, the higher (senior) commander coordinates the movement.

(8) When field artillery must displace over a route used by units of other arms, the force commander coordinates the movement.

(9) Except in operations involving nuclear employment, direct support field artillery has priority on roads before all other artillery.

c. *Planning for Employment From March Column.* The occupation of a position from a march formation requires detailed planning prior to the march so that personnel are alerted to the possibility and are aware of the require-

ments for a hasty occupation. Prior to the start of the march, selected artillery personnel are furnished with maps and/or photographs that show possible locations of installations and the control measures in effect. Forward observers and fire support (liaison) officers are kept informed of this prior planning. Command liaison is established with the supported or reinforced unit.

4-20. Methods of Displacement

a. Direct Support Battalions.

(1) *General.* A direct support cannon battalion displaces when the battalion commander considers displacement necessary or when ordered by the force artillery commander. The displacement is dictated by the scheme of maneuver of the supported unit. Continuous fire support must be maintained. When displacement is necessary, the battalion commander coordinates the movement of the battalion with the actions of the supported unit and establishes the following:

- (a) The method of displacement.
- (b) The time displacement will begin.
- (c) The expected time of completion.
- (d) The location of the new position area.

(2) *Method.* A direct support battalion displaces by one of three methods. The method used depends on the time available, the scheme of maneuver of the supported unit, the availability of reinforcing field artillery, traffic conditions, and enemy activity. The three methods are discussed in (a) through (c) below:

(a) When reinforcing field artillery is available, or when arrangements can be made for other field artillery to assume the responsibility for the direct support fire missions, the battalion may displace as a unit.

(b) The battalion may displace by echelon. When the battalion displaces by echelon, one firing battery and a portion of the headquarters (service) elements move in one echelon and the remainder of the battalion in another echelon. The portion of the headquarters battery to displace with the forward echelon should be established by SOP. When the battalion displaces by echelon, close coordination between the commander and the executive is essential. The commander normally proceeds to (or remains at) the forward position area to supervise the occupation of position by the forward echelon. The executive normally remains with the battalion to supervise the movement from the old position. When the forward echelon has occupied its forward position and is ready to

resume its fire support, the commander calls the second echelon forward by means of a prearranged code. If the situation requires that the battalion commander remain with the supported commander, the executive supervises the entire displacement.

(c) The battalion may displace one battery at a time. The responsibilities listed in (b) above are applicable for this method. Advantages are that the unit is less vulnerable to attack and it is more difficult for the enemy to detect the movement. Disadvantages include the lack of control over displacing elements and the prolonged time required to move the entire battalion.

(3) *Command post.* There should be no interruption in the operation of the fire direction center when the battalion displaces by battery or by echelon. Continuous communication is maintained with the supported unit, the reinforcing field artillery, and higher field artillery headquarters. The fire direction center displaces by echelon so that continuous massed fires can be delivered. Every effort should be made to establish communication between the advance command post and the supported unit prior to the displacement of the battalion; however, the lack of communication should not delay displacement. The other elements of the command post should displace as prescribed in paragraphs 4-18 through 4-21.

(4) *Continuous Support.* Firing batteries in support of marching troops may be positioned and moved successively to forward positions (leapfrogged) in order to insure that some weapons are always in position and prepared to fire in support of the marching troops.

b. Reinforcing Battalion. A field artillery battalion with a mission of reinforcing the fires of another field artillery unit displaces upon request of the reinforced artillery unit or when ordered by the force field artillery headquarters. The reinforcing unit is responsible for notifying the next higher field artillery headquarters of the method of displacement, the time displacement is started, the time displacement is completed, and the location of the new position area.

c. General Support Battalions

(1) *General support mission.* A general support battalion displaces when ordered by the force field artillery headquarters. A general support battalion normally displaces as a unit; however, if the situation demands, the battalion may displace by any of the methods used by a direct support battalion. The battalion com-

mander continually studies the situation and makes recommendations to the higher field artillery commander concerning position areas, routes, and time of displacement.

(2) *General support reinforcing mission.* A field artillery battalion with a general support-reinforcing mission displaces when ordered by the force field artillery headquarters, or upon request of the reinforced field artillery unit, subject to the approval of the force field artillery commander. In making recommendations to the higher commander concerning position areas, routes, and time of displacement, the battalion commander considers all elements of his mission. General support-reinforcing missions may be assigned to other units by the higher field artillery commander while the displacement is in progress.

4-21. Execution of the Movement

a. *Movement to the Position.* The executive officer alerts the battalion for the move. When directed, he marches the elements to the designated release point.

b. *Disposition of Elements During the March.* The formation of a field artillery march column for movement varies with the type of unit, the mission, and the tactical situation.

Column formations for nonfiring units differ from those for firing units; column formations for artillery marching alone differ from those for artillery marching as part of a march column of a supported combat unit. The batteries should be disposed within the column to assist their entry into the new position areas with the one moving to the most distant position in the lead. The order of march should be such that no battery has to pass another in order to get to its new position area. There should be an adequate interval between serials of the convoy to achieve march dispersion and to eliminate the need to halt the entire convoy in the event of temporary delays of lead vehicles. The vehicles should be separated by a specified gap; 100 to 150 meters is recommended in order to minimize the effects of an enemy attack.

c. *Field Artillery Support for the Column.* When enemy ground action halts the column, or when there are other requirements for immediate fire support, the field artillery battalion commander directs the appropriate firing batteries to occupy hasty positions and prepare to fire. The remainder of the battalion remains with the column until otherwise directed. The field artillery commander must never allow his unit to be in a situation where his firing elements cannot support the maneuver units.

Section VI. RSOP BY THE FIELD ARTILLERY BATTERY (CANNON, MISSILE, ROCKET) (SEE FM 6—50)

4-22 through 4-33 (Deleted)

Section VII. RSOP BY THE HEADQUARTERS AND HEADQUARTERS (AND SERVICE) BATTERY

4-34. General

a. In this section, reconnaissance, selection, and occupation of position within the command post area and the various installations that are included in the headquarters, headquarters (and service) battery will be discussed.

b. The latitude allowed the headquarters battery commander in positioning the elements of his battery and the extent to which he can develop an SOP depend on the following:

(1) *Echelon involved.* At battalion level, the staff sections have few subdivisions that require locations; for example, all S2 functions are performed in one place.

(2) *Policy of the commander.* Normally, the battalion commander directs the headquarters battery commander to organize the CP area. The headquarters battery commander may be required to obtain approval of his plan prior to

the organization, or he may have complete authority. The initial reconnaissance may be made by the communications-electronics officer, who will select tentative locations for the various installations. Both the communication officer and the headquarters battery commander must know the desires of the commander.

(3) *Staff section requirements.* The headquarters battery commander and the communications-electronics officer should know the type of location required by each element to insure efficient operation and should understand the relationship among the various elements of the CP.

c. After an SOP has been developed, the same general layout of the CP should be used in each position. Using the same arrangements of installations results in greater efficiency of operation.

4-35. Receipt of Orders

The headquarters battery commander receives his orders at the same time that orders are issued to the cannon (rocket, missile) battery commanders.

4-36. Characteristics of Position Areas

In planning the organization of the position area, the headquarters battery commander and the communication officer consider the following requirements:

a. *Space.* Except as varied by the policies of the commander, the space requirements for the CP may depend on the organization of the fire direction center (FDC), and on the number of additional personnel that must be accommodated. If specialist teams are attached or if separate locations are required for some installations and activities, a larger area will be necessary. In evaluating the space available, the battery commander and the communications-electronics officer consider the location requirements for—

- (1) The operations and fire direction section.
- (2) The message center.
- (3) The switchboard.
- (4) The radio panel station.
- (5) A vehicle dispersal area near the message center for visitor traffic.
- (6) Battalion supply, maintenance, and ammunition (if applicable).
- (7) Headquarters battery elements.

(8) Security and perimeter defense elements.

(9) The battalion headquarters support section.

(10) Medical section.

b. *Cover and Concealment.* The area should have sufficient defilade to minimize visual or radar observations by the enemy. Heavily wooded areas provide concealment, but good locations for the elements of radio and panel station may not be available. In areas of sparse or scattered vegetation, camouflage is necessary. In open terrain such as desert, elements in the CP area should be dispersed in such a manner as to conceal the installation.

c. *Security.* The area should be such that the defense can be organized with the weapons and personnel available. If possible, the command post should be located to derive some protection from the security measures of the cannon, rocket, or missile batteries. Arrangements should be made for mutual protection with adjacent units.

d. *Headquarters (Service) Battery Area.* The location of the CP, the tactical situation, security, supply, sanitation, and accessibility govern the selection of the headquarters (service) battery area. The area should have good drainage and concealment and should offer adequate space for a vehicle dispersal area and maintenance facilities. The elements of the battery should be grouped together for administration and control.

4-37. Executing the Reconnaissance

The battery commander's party may be divided into two groups, one to perform the reconnaissance for the CP area and the other to reconnoiter the area for the headquarters (service) battery elements. Normally, only the position for one major element need be designated. The other elements can then be located according to their functional relationship with the major element. This procedure should be included in the battery SOP.

4-38. Planning the Occupation

a. *General.* After selecting locations for the various elements of the CP and verifying the plan for organization of the area, the headquarters battery commander and the communication officer plan the occupation.

b. *Equipment.* It may be desirable to move and install a certain amount of equipment prior to the occupation. Such equipment will

consist primarily of facilities for shelter and local communication equipment. For example, the fire direction center should be able to move into the area, occupy the position, and begin operations without delay.

c. Route Markers. When the headquarters and the headquarters battery move as part of the same march unit, as they frequently do, route markers are usually provided for in the orders of the battalion commander. When the CP element displaces alone, the headquarters battery commander is responsible for providing route markers.

d. Coordination. Because all headquarters staff elements are affected by displacement of the headquarters battery, the general plans for movement to, and occupation of, the new area should be coordinated in advance with the battalion executive officer.

4-39. Displacement of the Battery

a. General. The method and details of displacement are prescribed by the higher commander either in an SOP or in specific orders for each movement.

b. CP Displacement. The battery commander should, at all times, know the capabilities of the headquarters battery to move the CP. If for any reason the command post cannot be moved in one echelon, he should inform the battalion executive officer and recommend a method of displacement. When a move is imminent, he should be prepared to make recommendations before the commander's plans are made. Therefore, he must be kept informed of all contemplated movements. When the CP displaces by echelon, each staff officer is responsible for the section under his control. He informs the battery commander as to the number of personnel, the amount of equipment, and the persons in charge of the subdivisions in each echelon.

c. RSOP. Reconnaissance, selection, and occupation during the displacement is again accomplished as described in preceding paragraphs of this chapter.

d. Movement by Echelon.

(1) *Transportation.* Certain vehicles should be designated to displace and remain with each echelon. These are primarily the command administrative vehicles needed at each location. Other vehicles may remain at the advance CP or may return to assist in the displacement of the rear echelon.

(2) *Mess.* Provisions must be made for messing the personnel of each echelon. When the time interval between the displacement of echelons is short, emergency rations may be issued to the echelon containing the fewest personnel. When the time interval is more than 24 hours, provision should be made to provide personnel in both echelons with hot food.

4-40. Occupation of Position

a. The battery commander may issue his orders for the occupation to the members of his reconnaissance party, or he may return to the headquarters battery before issuing his orders. When it is necessary for him to return to the battery, he may leave the first sergeant in the new area. On returning to the battalion headquarters from the reconnaissance, the battery commander reports the results of his reconnaissance and gives his plan for the movement and occupation to either the battalion executive officer or the staff officer in charge. The executive officer or the staff officer in charge issues instructions to the staff sections in conformance with the approved plan. The battery commander then assembles the key personnel of the battery and issues his orders.

b. The battery commander may assemble certain personnel from the staff sections and headquarters battery and proceed to the new area in advance of the main column. This party should include route markers and sufficient personnel to prepare the new area for occupation. A staff officer may be designated by the battalion commander to lead the main column, or the battery commander may assign this duty to the headquarters battery executive officer.

Section VIII. RSOP BY THE SERVICE BATTERY

4-41. General

a. The battalion commander will usually select the general area for the location of the service battery. The service battery commander may or may not accompany the battalion com-

mander on the reconnaissance; however, he will make his own detailed reconnaissance in the general area designated by the battalion commander. The essential requirement for a service battery position is that it must permit the bat-

tery to perform its support mission for the battalion.

b. The guidance stated in section VII is applicable to an RSOP by the service battery.

4-42. Reconnaissance Party

The service battery commander normally will have sufficient time to make a deliberate reconnaissance of the position area. The reconnaissance party should be composed of the personnel necessary to assist the battery commander in selecting locations for installations, in organizing the area before occupation, and in providing local security prior to and during the occupation of the position.

4-43. Occupation of Position

a. The service battery will occupy the new position at the times specified by either the battalion or battery commander. The battery may displace by echelon or as a unit. If the battery moves as a unit, it has a greater capability for local defense against ground attack. The procedures for occupation of position discussed in foregoing sections also apply to occupation of position by a service battery; however, the large number of vehicles in a service battery creates an additional requirement for detailed planning.

b. The service battery of a separate field artillery battalion will move as directed by the battalion commander.



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CHAPTER 5

ORGANIZATION OF POSITION

Section I. THE HEADQUARTERS AND HEADQUARTERS (AND SERVICE) BATTERY

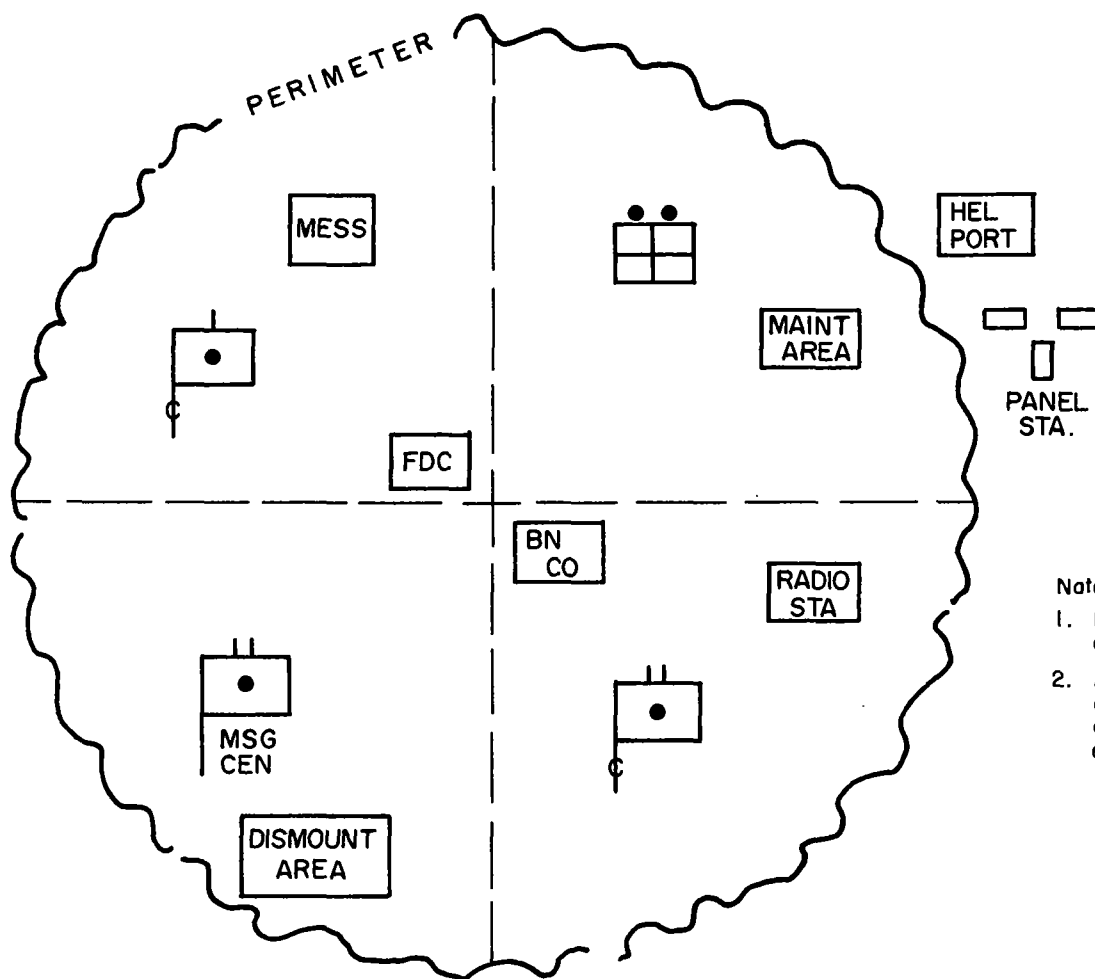
5-1. General

Organization of the positions of the various elements of the headquarters and headquarters (and service) battery starts with the battery commander's plan. Improvement continues as long as the unit remains in that position. No standard plan or organization can be prescribed that will be applicable to all situations. However, the practices developed from experience and theory may be used as guides. The

priority for location of each element of the battery is usually determined by the battalion commander and prescribed in the SOP.

5-2. Battalion Command Post

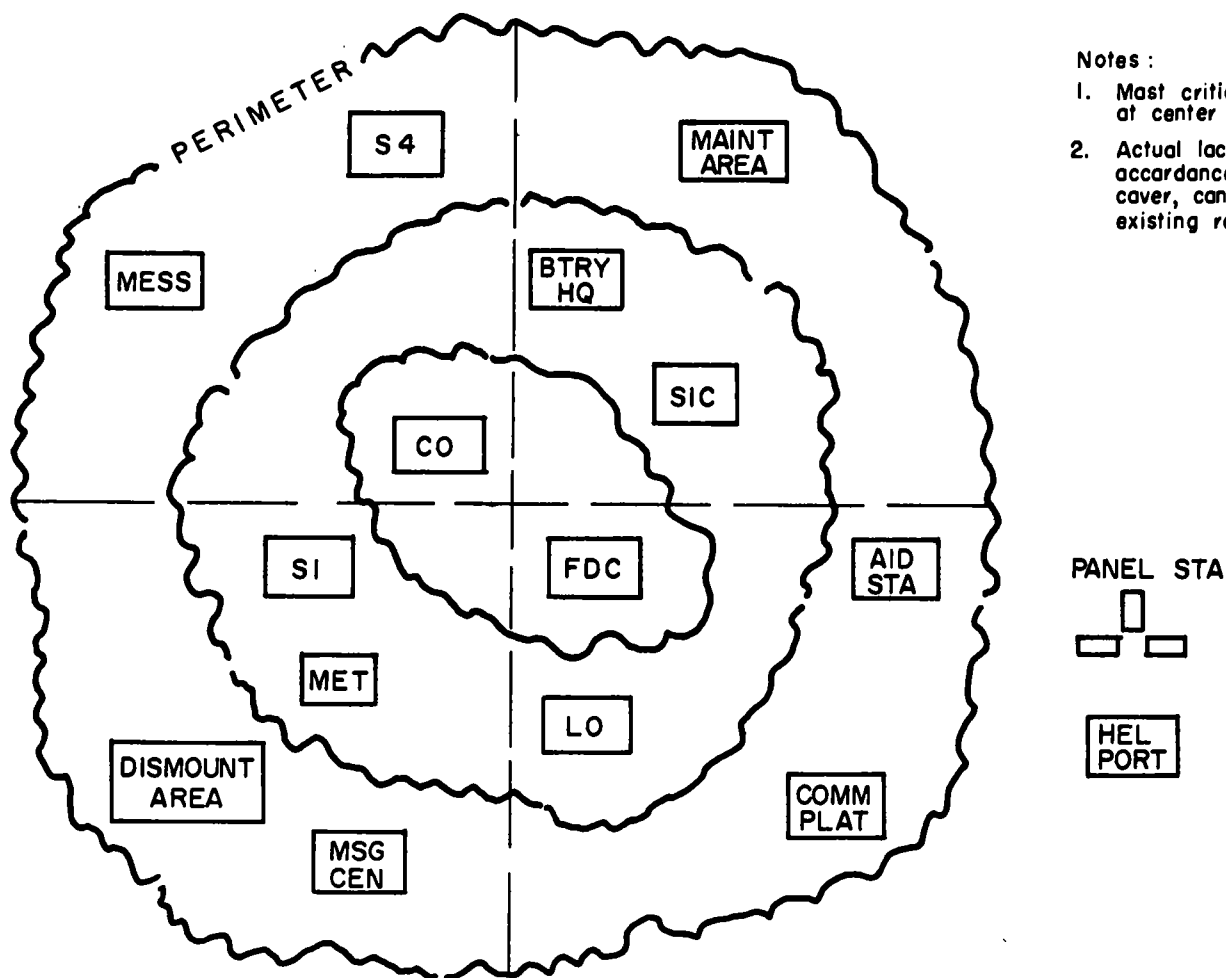
The command post (CP) is the headquarters of the field artillery battalion commander. It is here that the commander, assisted by his staff, performs his administrative and tactical command functions. If it is necessary to eche-



Notes:

1. Most critical installations at center of area.
2. Actual location will be in accordance with available cover, concealment and existing road net.

Figure 5-1. A type battalion command post area.



Notes:

1. Most critical installations at center of area
2. Actual location will be in accordance with available cover, concealment and existing road net.

Figure 5-2. A type division artillery command post area.

lon the headquarters, the forward echelon includes the command post. Intelligence and operations are the primary staff functions involved in the operation of the command post. Other staff functions which contribute to both intelligence and operations are reconnaissance and survey, communications, liaison, and logistics.

5-3. The Battalion Command Post Area

a. General. The locations selected for the command post elements depend on the size of the area, the method of positioning to be used, the guidance of the commander and his staff, and the requirements for coordination between the elements. The general arrangement should be such that visitors arriving at the CP will first pass through the message center visitor control area. Traffic within the CP area should be held to a minimum and be strictly controlled. Vehicles entering the area should be stopped at a dismount point, usually located near the mes-

sage center, and then directed to the vehicle dispersal area. Vehicles that must enter the CP area should be restricted to prescribed routes. Foot movement within the CP should be restricted to prescribed trails or paths. Type CP layouts for a battalion and a division artillery command post area are shown in figures 5-1 and 5-2.

b. Commander. The battalion commander usually is located in the vicinity of the fire direction center (FDC). The executive officer and the sergeant major should be located near the commander.

c. Fire Direction Center (FDC). The FDC is the element responsible for performing the fire direction functions of the field artillery battalion. The FDC should be located in an area which is outside the normal traffic lanes of other CP activities. This installation should be marked to indicate that only authorized personnel may enter.

d. S2/S3 Operations Center. This center is the

installation in which the normal S2/S3 operations are performed. It is collocated with the FDC.

e. Message Center. The message center should be located at the entrance to the command post area so that it will be readily accessible to incoming messengers and visitors. Adequate space for vehicle dispersal should be available.

f. Switchboard. The battalion switchboard should be located so as to facilitate the installation of wire circuits. It should be located on the perimeter of the command post area in a covered and protected area away from noise and interference. The importance of the switchboard renders it a particular target for infiltrating enemy; consequently, it must be well protected.

g. Radio and Panel Station. The radio and panel station consists of the communication facilities for the command and fire direction net, a panel display area, and a message pickup field for either fixed-wing aircraft or helicopters. The radio and panel station should be located some distance from other installations, but still within view and protection of the defensive perimeter. The location should provide concealment for radio sets, vehicles, and personnel. Antennas should be dispersed and placed so that the maximum amount of electromagnetic radiation emitted in the direction of the enemy is absorbed by terrain and foliage. There should be sufficient open terrain to permit the display of panels and the operation of the pickup field. As the organization of the command post progresses, remote control should be established

from the radio sets to the S2/S3 operations center.

h. Aid Station. The battalion aid station should be located near a road or trail to assist in the rapid reception and evacuation of patients.

5-4. The Headquarters Battery Area

The headquarters battery area is organized to give maximum support to the command post. In organizing the area, the battery commander considers the following requirements:

a. All personnel assigned to the same CP element should be quartered together. The staff officer who supervises the element, in cooperation with the battery commander, usually assigns personnel to shifts for 24-hour operation. The battery commander is responsible for insuring that the assigned personnel are available for duty at the required times.

b. A route from the dismount point to the vehicle dispersal area should be prescribed as a security measure and also to avoid confusion. It is desirable to install a local telephone circuit from the switchboard to a control point within the vehicle dispersal area.

c. The mess facilities should be located in the headquarters battery area and should be easily accessible to the CP area. The facilities should be located near a road to facilitate supply and resupply.

d. The defense of the headquarters battery and CP areas is generally the same as that of cannon, rocket, and missile batteries (chap 6). The security of the headquarters battery is integrated with that of the CP.

Section II. THE FIELD ARTILLERY CANNON BATTERY (SEE FM 6-50)

5-5 through 5-14 (Deleted)

Section III. THE FIELD ARTILLERY MISSILE (ROCKET) BATTERY

5-15. General

Organization of the position area of a field artillery missile (rocket) battery consists of the operations necessary for delivery of fire. The priority operations include checking out the missile (rocket) and the warhead section, assembling the missile (rocket), loading the missile (rocket), and laying the launcher.

5-16. Firing Elements

The locations of the missile (rocket) battery firing elements are determined by the mission requirement. Specific guidance regarding the locations of the various rocket and missile (rocket) firing systems is contained in the applicable field manuals, including FM 6-39, FM 6-37, FM 6-42 and FM 6-61.

Section IV. THE SERVICE BATTERY

5-17. General

The service battery area is organized to permit efficient performance of all battalion and battery functions and, at the same time, to provide defense against all types of attack. In organizing the position area, the battery commander should take advantage of defiladed areas, cover and concealment, and existing road networks.

5-18. Routes

Organization of the position area should permit easy access to all installations. Routes to the battalion supply and maintenance installations and to the battalion ammunition dump should not pass through the bivouac area. The position area should have separate entrance and exit routes which should be well concealed from enemy observation.

5-19. Dispersion

The installations of the service battery must be sufficiently dispersed to provide a reasonable degree of passive defense against enemy air or artillery attack. On the other hand, the defense of a widely dispersed service battery against ground attack is difficult because of the smaller number of personnel organic to the service battery. The principal considerations governing dispersion are the mission, the terrain, the capabilities of the enemy, and the proximity of friendly troops in the area.

5-20. Installations

The battery headquarters area should be located so that traffic to the battalion installations will not be routed through it. The locations of battery installations within the headquarters and within the bivouac area are generally the same as for other types of batteries. The elements of the service battery are located as follows:

a. The battalion supply section should be conveniently located near an entrance to the position area. The area should be well drained and should permit concealment of bulk supplies. The elements of the section are organized as directed by the S4 or by the general supply warrant officer. A separate protected facility

may be used for a ration breakdown and storage facility.

b. The location for the battalion maintenance section should provide sufficient room for dispersion of vehicles, firm ground, cover, concealment, and a water source. It should include a relatively flat location for maintenance operations. Sumps should be prepared for disposal of waste lubricants and trash.

c. The ammunition train dispersal area normally is established within the service battery position area. It should be located so that enemy fire directed against the area should not endanger the remainder of the battery. The area should be well drained; should provide cover, concealment, and room for dispersion; and should be readily accessible to ammunition vehicles.

5-21. Security

The principles and procedures applicable to the defense of the battery position area (chap 6) are applicable to the service battery. Because the number of personnel in the service battery is limited and because the battery has no cannons for direct fire, the defense system of the service battery should be integrated with the defense systems of other units in the area whenever possible.

5-22. Communications

The service battery should have a direct wire line to the battalion switchboard. In some situations, the service battery may be so distant from the battalion that direct wire communication will be impracticable. In such situations, the battery will lay a line to the nearest unit having access to trunklines connecting with the battalion wire system and request that the line be connected to the unit's switchboard. Local lines within the service battery position area are established as directed by the battery commander. In addition to wire communication, the battery commander has a radio set for operation in the battalion command/fire direction net.

CHAPTER 6

DEFENSE OF THE BATTERY POSITION AREA

Section I. DEFENSIVE POLICIES

6-1. General

Field artillery units must be able to engage in close combat and defend against air attack when necessary to accomplish their mission. Attacks against field artillery in position can be expected and must be resisted. This is particularly true in stability operations. The mission of the field artillery is to provide fire support to the supported maneuver force. Field artillery will not withdraw from a position or fail to render fire support solely because of a threat of attack by hostile forces. Field artillery withdraws only as part of a planned withdrawal and upon receipt of orders from the next higher commander. Traditionally, the field artillery continues the mission and defends the weapons. Some of the defensive tactics and plans include—

a. General Plan. Each battery establishes a perimeter defense around its position. The perimeter defense includes dug-in positions for all machineguns and antitank weapons organic to the battery and two-man foxholes for the security force. Listening posts or outposts are established beyond the perimeter, and wire or radio communication is established with the firing battery command post to provide early warning. Under certain tactical conditions, contact patrols are used for maintaining contact with adjoining units. Obstacles such as barbed wire and minefields (when authorized) are constructed beyond handgrenade range of the perimeter to impede the enemy. An assembly point for the reaction (security) force is designated.

b. Flexible Defense. An all-round, completely integrated defense system is essential to the security of the battery. The following actions are taken to insure all-round defense:

(1) Primary and secondary sectors of responsibility are assigned to each crew-served weapon.

(2) The cannon positions are assigned and prepared so as to permit direct fire coverage of the entire perimeter.

(2) ~~Fire~~ Fire plans are developed to cover all avenues of approach.

(3) ~~A~~ A battery reaction force is formed and outposts are established as required.

(4) ~~Automatic~~ Automatic weapons, grenade and antitank weapons, and air defense weapons are located for most effective employment.

(5) ~~Definite~~ Definite defensive positions are assigned to all personnel.

(6) ~~A~~ A warning system is established to include the use of devices for early detection and an alarm system to warn of surprise attacks.

(7) ~~Defense~~ Defense is coordinated with adjacent units for mutual support.

c. Field Fortifications. Construction of field fortifications should be initiated as soon as possible without delaying the delivery of fire. For planning purposes, one man using a pick and shovel can excavate from $\frac{1}{2}$ to 1 cubic meter of earth per hour. Bulldozers, if available, should be used to expedite the preparation of fortifications and to conserve manpower. Sandbags and salvage material, such as powder containers and ammunition boxes filled with sand, provide suitable material for revetments. See FM 5-15 for further details on the various types of field fortifications.

d. Reaction Force. Each battery forms a security force as an integral part of the battery defense plan. The primary tasks of the reaction force are to strengthen a threatened portion of the defense, to destroy or eject any enemy who penetrates the perimeter, and to restore the defensive line. The security force should resemble an infantry rifle squad, both in size and composition. The security officer, designated by the battery commander, supervises the battery reaction force and insures that the force receives complete instructions, including the signal for, and the place of, assembly.

6-2. Sustained Fire Support

A field artillery battalion or ~~battery~~ operating independently should coordinate with adjacent

field artillery units and higher echelons to insure mutual support in sustaining artillery fire support during an attack on its position. A field artillery battery must continue to provide fire

support during an attack against its position. When necessary, some sections may continue the fire mission while the other sections place direct fire on the attacking enemy.

Section II. SECURITY

6-3. General

The battery commander is responsible for the security of his unit. He should designate an officer as the battery security officer. Either the executive officer or the assistant executive officer assists the battery commander in all matters relating to the security of the battery by—

a. Implementing the battery commander's security plan. On the basis of the battery commander's selection of locations for the battery installations and his plan for defense, ~~the security officer, assisted by the first sergeant,~~ prepares a detailed plan for the battery defense system. He specifies the responsibilities of personnel at each machinegun and antitank weapon position and at other crew-served weapon positions; he also supervises the posting of the outposts, machineguns, and antitank weapons. He directs the preparation of an observation plan, giving particular attention to surveillance of approaches during periods of limited visibility or darkness.

b. Coordinating the installation, marking, charting, reporting, and removal of warning devices, barbed wire, mines, and boobytraps. All such obstacles should be covered by the fire of cannons and/or automatic weapons.

c. Supervising the installation of the nuclear weapons exclusion area if such an area is required. Details regarding security requirements are found in AR 50-5, 380-5, 380-20, and 380-55.

d. Coordinating the battery defense plan with adjacent units.

e. Assigning specific defense missions to elements of the battery.

f. Planning, organizing, and dispatching patrols as directed by the battery commander.

g. Organizing and commanding the battery reaction force.

h. Supervising the continuous improvement of the battery defenses.

i. Submitting a plan for the battery defense system to the battery commander for approval and subsequent submission to the battalion executive officer.

j. Conducting rehearsals of battery defense.

6-4. Security Outposts

Security outposts may include machinegun, antitank weapon, and other crew-served weapon positions; listening posts; and observation posts. These outposts may be equipped with night viewing devices and sensors and should be situated on commanding terrain which provides observation and coverage by fire over all routes of approach into the battery area. All routes of approach should be covered by warning devices or systems to alert the outposts of movement at specific locations. The distance from the defensive perimeter to the outposts depends on the terrain in and around the position area. However, the outposts should be placed far enough from the defensive perimeter to permit the warning of attack to be given in time for implementation of the defense plan. If necessary, the more distant outposts may be withdrawn into or near the defensive perimeter at night. When time permits, the intervals between outposts are covered with barbed wire, obstacles, trip flares, and mines (when authorized). Outpost personnel must be thoroughly briefed on the location of friendly elements and advised of the movements of personnel, such as messengers, patrols, and wire crews. Communication between the outposts and the battery is imperative. Contact patrols are used for this purpose under certain tactical conditions. Such patrols may also be used to maintain contact with adjacent friendly units.

6-5. Listening Posts

When outposts are withdrawn at night, listening posts are established on or near the perimeter of the defended area. Listening posts are located along all avenues of approach in order to detect the sounds made by enemy personnel and equipment. They are positioned to facilitate night observation of silhouettes. They must be dug in, provided with communications, and covered by fire from within the position, and they should be protected by barbed wire or other obstacles.

6-6. Patrols

Avenues of approach to the battery area and

areas which might provide concealment or cover for enemy forces should be actively patrolled or kept under surveillance. Patrols should cover specific areas but should not repeatedly follow identical routes or schedules. Patrols should make personal contact with as many of the outposts along their route as possible without exposing either themselves or the outposts. Visual contact must be made with those outposts in exposed locations. Patrols should also maintain contact with adjacent units. When patrols locate enemy forces, they should not engage the enemy in a firefight unless absolutely necessary, but should keep the enemy forces under surveillance and notify the battery. Immediately before darkness, and immediately after dawn, patrolling should be intensified. Before outposts are reoccupied after dawn, the routes and positions should be checked by patrols for possible ambushes. Patrol activities are coordinated with other units in the area to prevent duplication of effort and the possibility of patrols firing at one another.

6-7. Communications

Communications between the outposts, the listening posts, and the battery should be integrated into the battery switchboard by placing all the installations on one continuous wire circuit (hot loop). This system permits one outpost to alert the other outposts, the listening posts, and the battery simultaneously. Alternate methods, such as sound devices, pyrotechnics, and runners, should be ready for use. When time permits, the wire lines should be buried and alternate lines provided to all positions. Radio communication normally is used by patrols and may supplement the wire communication to the outposts and listening posts. Patrol leaders must be well trained in communications security techniques to protect against enemy attempts to disrupt or confuse communications with the base camp.

6-8. Illumination

a. Illuminating devices and pyrotechnics may be used advantageously when the battery is under attack at night. Plans for the use of illumination must be coordinated with higher headquarters. Illuminating shells, when used, should be detonated well behind the enemy force in order to silhouette the enemy and, at the same time, place minimum light on the defensive battery. Care must be taken to avoid disclosing friendly locations not under attack.

b. The use of illumination should be secondary to the use of night surveillance devices. Illumination should be employed only when necessary to repel a significant probe or attack (FM 6-40 and FM 20-60).

6-9. Obstacles

Obstacles are used to reinforce the outpost system and the main perimeter defense. Artificial obstacles may be used to supplement natural obstacles. Both must be covered by observation and fire to be effective. Mines, flame field expedients, trip flares, and barbed wire serve both as obstacles and as part of the warning system. Mines and boobytraps, other than those employed in protective minefields, may be used only when specifically authorized by higher headquarters. Unit minefields must be properly marked, recorded, and reported. The report must be submitted to higher headquarters and to friendly units in the vicinity and must show the locations of the mines and safety lanes (FM 31-10). Guards must be posted to warn friendly personnel. Concertina or double-apron barbed wire is used to cover avenues of approach and to protect the main perimeter defense. Barbed wire should be located far enough from protected installations to keep them beyond hand grenade range, yet close enough to insure day and night observation and coverage by fire. Trip flares and perforated tin cans containing pebbles may be attached to the barbed wire as alarm devices.

6-10. Camouflage

The purpose of camouflage is to conceal the location of the position of the battery or to mislead the enemy regarding its strength, type, and intentions. The three principles of concealment are siting, camouflage discipline, and camouflage construction. In organizing his battery position area, the battery commander must devise a camouflage plan to take advantage of natural concealment and to supplement the natural means by skillfully applying the principles of concealment. Camouflage is a passive measure for defense of the position area and is especially important when the enemy has air superiority. For a detailed discussion of camouflage, see FM 5-20 and TM 5-200.

6-11. Deception

Deception measures, such as those described in this paragraph, will not be employed without authorization by the appropriate commander.

Dummy positions must be employed to deceive

the enemy regarding the true locations of units.

Section III. DEFENSIVE PREPARATIONS

6-12. General Defensive Measures

a. Each battery should prepare an SOP for the conduct of its defense. The SOP should conform to the defense plan of the parent battalion. Procedures which apply to the defense of all types of batteries include the following:

(1) Each machinegun, air defense weapon, and antitank weapon must be protected by rifle fire.

(2) Sectors of fire are assigned to all crew-served weapons, and stakes are set to indicate the lateral limits of the sectors.

(3) Indiscriminate firing of weapons is prohibited.

(4) Friendly forces which may be affected must be warned of planned direct artillery fire or long-range automatic weapons fire.

(5) Periodic reports should be made by all outposts. The reports should be staggered in time so as to preclude a report pattern.

(6) Unmistakable warning signals must be used (app C).

(7) Personnel and weapons must not be silhouetted against the sky.

(8) Dawn and dusk patrols should cover the immediate terrain surrounding the battery.

(9) Barriers within the position area may be used to prevent the enemy forces that penetrate the perimeter from having direct access to all installations simultaneously.

b. The following precautions must be observed during operations at night and under conditions of limited visibility:

(1) Reserve small-arms ammunition and grenades for night use must be distributed prior to darkness. Grenade boxes must be opened, and ammunition must be placed in clips and magazines.

(2) When trip flares, flame field expedients, boobytraps, and mines are to be used, they must be armed prior to darkness.

(3) Strict adherence to the correct use of the sign and countersign is required.

(4) Outposts should be pulled in close to the perimeter, and listening posts should be established along avenues of approach. Night vision equipment and ground sensors should be employed when available.

(5) Movement within the defended area must be minimized.

(6) A definable point on the perimeter should be designated as an exit and entrance point.

(7) Firing of automatic weapons should be carefully controlled to prevent unnecessary disclosure of their locations.

(8) Light and noise discipline must be maintained.

(9) Strict compliance with chemical, biological, and nuclear attack detection and alarm procedures is required on a continuing basis.

(10) Warning devices and systems should be employed near avenues of approach with monitors located as required by unit SOP.

c. In addition to the main mission of providing prompt fire support, defense positions should be prepared and improved as time permits. The positions should be destroyed upon departure, since the enemy may occupy abandoned positions and attempt to prevent friendly reoccupation.

6-13. Perimeter Sketch

When a battery is functioning as part of a battalion, the battery commander forwards an accurate sketch of the battery defenses to the battalion executive officer. His sketch is consolidated with those of the other batteries, and an overall plan for the defense of the battalion is devised. The information to be included on the sketch is prescribed in the battalion SOP. (See FM 6-50)

6-14. Warning System

An efficient warning system is required for alerting the battery immediately upon the detection of enemy forces or when an attack is expected. Warnings are provided by electronic warning devices, warning systems outposts, listening posts, and patrols; and are transmitted by various means, including pyrotechnics, horns, whistles, gongs, weapons, and voice. Electronic surveillance devices may be used to augment the security provided by the outposts and listening posts. Provisions should be made for mutual warning among adjacent, supported, and higher units. In order to provide a standard method of disseminating emergency warnings within the NATO forces operating on land, the United States Armed Forces, together with certain other NATO forces, have concurred in the provisions of STANAG 2047, the details of which are contained in appendix C.

Section IV. TYPES OF ATTACKS

6-15. General

A field artillery battery may be subjected to air attacks, artillery or mortar attacks, ground attacks by small infiltrating parties or guerrillas, or ground attacks in strength by exploiting or bypassed forces. The defense against any attack is conducted aggressively. Predetermined defense plans and preparations are modified to fit the situation. The paramount considerations are continuance of the mission of the battery and the protection of the weapons.

6-16. Air Attack

Field artillery battalions and batteries may be subjected to frequent overflights by hostile reconnaissance and observation aircraft on target acquisition and intelligence-gathering missions. In addition, extensive use of tactical aircraft against field artillery units can be expected. The field artillery battery has a limited capability to defend itself against an air attack. Passive means of defense, such as camouflage and dispersion, should be stressed. Aircraft recognition is described in FM 44-30 and should be stressed in unit and individual training. Active defense against air attack is discussed in paragraph 6-33.

6-17. Infiltration

Small bands of infiltrators with a hit-and-run mission may attempt to destroy a small portion of the battery and to cause disclosure of the locations of weapons and installations. Such attacks usually occur at night or during periods of poor visibility and may precede an attack in strength.

If the attack is of limited strength, personnel should use small arms and grenades, rather than automatic weapons to disorganize and repel the attack. The battery security force should not be committed against such attacks.

6-18. Artillery or Mortar Attack

When a battery is subjected to an artillery or mortar attack, every effort must be made to locate the enemy weapons.

6-19. Attacks in Strength

Attacks by strong forces may occur at any time. When an attack does occur, the entire battery is alerted and the defenses are fully manned. Outposts remain concealed to observe and report enemy movements and to adjust indirect field artillery fire. When the enemy approaches the position, the outposts open fire to delay and disorganize the attack. Machineguns and other automatic weapons open fire when the enemy is within effective range. Antitank weapons attack enemy tanks, personnel, and crew-served weapons at close range. Personnel who are not engaged in operating a crew-served weapon deliver rifle fire from the main perimeter defense. The reaction (security) force is employed to reinforce the threatened area. Aggressive and determined resistance must continue until the attack is repelled. Once close defensive action begins, withdrawal by the defenders is difficult and costly. *Field artillery units that are prepared for defense will not be overcome unless overwhelmed by a force superior in number or weapons.* After the attack is repelled, the field artillery unit does not pursue the enemy.

Section V. EMPLOYMENT OF WEAPONS

6-20. Small Arms

Personnel must always have their individual weapons with them and ready for use. Ammunition *must* be in clips or magazines, ready for use; however, there should be no round in the chambers of weapons unless the individuals bearing the weapons are on patrol or are alerted against an attack. Distributing points for small-arms ammunition should be set up at frequent intervals along the main defensive line to provide immediate resupply.

6-21. Grenades

a. Hand grenades are effective for close-in defense and are especially effective in repelling a night attack. A number of grenades should be readily available at all defensive positions. The use of fragmentation grenades must be closely controlled to prevent injury to friendly personnel.

b. The grenade launcher M203 (or M79), due to its range capability and accuracy, is effective in the defense of positions. It can be employed

against targets that cannot be attacked by other means.

6-22. Machineguns

Machineguns are employed both on the outposts and on the perimeter. Machineguns on the perimeter must be sited to provide covering fire for the outposts. The sectors of fire from these positions should overlap to provide a continuous belt of flanking grazing fire around the position area. Several positions may be selected for each machinegun-outpost position for normal daylight use, positions on the perimeter for use at night, and positions for use after the withdrawal of the outposts. Defense considerations for employment of machineguns assigned an air defense mission are contained in FM 44-1.

6-23. Antitank Weapons

The antitank weapons available to field artillery units are the lightweight antitank weapon (LAW) and the rocket launcher. These weapons may be used effectively beyond and within the defense perimeter, and as armament for the security force. Antitank weapon positions should not be located more than 200 meters beyond the perimeter. They should be covered by fire of other weapons and should be concealed and well dug in so that the individual or crew may remain in position to deliver fire from close range against the sides of tanks and armored vehicles. Positions for antitank weapons and routes to and from positions must be changed frequently to avoid disclosure of the defensive plan.

Section VI. DEFENSE OF THE FIELD ARTILLERY CANNON BATTERY

6-24 through 6-25 (Deleted)

6-26. Field Artillery Missile (Rocket) Battery

Field artillery missile (rocket) batteries employ the same general type of defense as cannon batteries.

The mission of the missile (rocket) battery makes the battery a high priority target for enemy attack. Generally, the battery is located farther to the rear than most combat support forces, making it more susceptible to attack by airmobile and/or guerrilla forces and by infiltrators. (See FM 6-50)

Section VII. DEFENSE OF THE HEADQUARTERS AND HEADQUARTERS BATTERY AND SERVICE BATTERY ELEMENTS

6-27. General

Field artillery headquarters and headquarters batteries and service batteries employ the same general type of defense as the cannon batteries. The locations of these units frequently permit integration of their defenses with those of adjacent units. However, the echelonment of these units complicates the planning and implementation of their defenses.

6-28. Headquarters and Headquarters Battery

The headquarters and headquarters battery is divided into several installations, including the battalion command post, the aid station, and the headquarters battery area. Security is achieved with organic weapons and personnel by using the defensive characteristics of the

terrain, arranging for mutual support with adjacent units, and organizing a reaction (security) force. Machineguns and antitank weapons are sited to cover the avenues of approach and are, in turn, covered by rifle fire. The elements of the battery, such as the fire direction center, message center, and communications section, prepare their positions as strongpoints by digging foxholes and automatic weapon positions. An efficient warning system, a plan for air defense, patrols, and a security force round out the active defense measures. Passive measures include camouflage, field fortifications, and obstacles. Depending on the type of unit, its mission, and the situation, the battery may be situated adjacent to, and its defense integrated with, other units, such as cannon batteries and supported unit command posts, or it may be situated within the perimeter of the reserve elements of the supported force.

6-29. Service Battery

The service battery is the rear echelon of the battalion. It is located on or near the axis of supply and to the rear of the bulk of the combat units. The location will depend on the instructions of the battalion commander, the existing

road net, the road conditions, the locations of supply points, the availability of concealment and areas for dispersal of heavy vehicles, and the proximity of the battery to other units. If several service batteries are located in the same area, local defenses may be combined and coordinated for mutual security. At times, the situation may require that the service battery be located within the battalion perimeter. Wherever the battery is located, arrangements must be made with adjacent units for mutual support. The ammunition train normally is located with the service battery and should be on or near the route from the firing batteries to the ammunition supply point. Occasionally, sections of the ammunition train will be attached to the firing batteries; frequently, the ammunition sections of firing batteries will be attached to the ammunition train. The greatest threat to the ammunition train is the possibility of attack on the road. Normal security measures, such as maintaining guards on convoy or movement alert, avoiding defiles when possible, reconnoitering points of possible ambush, and attaching air defense artillery weapons (when available) to the column are observed to avert such an attack.

Section VIII. DEFENSE AGAINST AIR ATTACK

6-30. General

The battery employs both passive and active defense measures against air attack. The battery counters low-altitude air attacks with large volumes of fire by organic weapons (air defense and crew-served and individual weapons). Specific procedures relative to defense against air attack are contained in paragraphs 6-32 and 6-33.

6-31. Passive Defense

a. General. Passive means of defense include camouflage and concealment, field fortifications, cover for personnel and materiel, obstacles, and communications security.

b. Concealment. Concealment is obtained by the use of camouflage nets supplemented by available natural camouflage. FM 5-20 and TM 5-200 present information regarding camouflage principles. During marches, vehicles and other equipment peculiar to the battery should be camouflaged consistent with the movement safety and march requirements.

c. Cover. Requirements for concealment may conflict with those for field fortifications to protect personnel and materiel against enemy

fires. Digging materiel shelters without violating camouflage discipline may be difficult. The advantages/disadvantages of concealment versus those of cover for personnel and materiel must be considered. Digging in should be done during darkness, and a plan should be made for disposal of spoil and elimination of tracks.

d. Communications Security. FM 32-5 provides general guidance in all phases of communications security. Special attention should be given to operating patterns or procedures which may identify the battery. Communications security, survey, and advisory assistance is provided by US Army Security Agency (USASA) units attached to the field army, corps, and division.

6-32. Active Air Defense Measures (Redeye)

a. General. ~~The Redeye~~, a 29-pound, infrared homing air defense weapon system, provides the field artillery cannon battalion with a self-defense capability against low-flying aircraft. ~~The Redeye weapon system is not a component of an integrated and coordinated area air defense system.~~ For further details and for classified information pertaining to Redeye, see FM 23-17, FM 23-17A, and FM 44-1.

b. Rules Of Engagement. The definition of a hostile act and the criteria for identification of aircraft will be published by the force headquarters (based on the approved Joint Air Defense policies) and will be incorporated in the field artillery unit SOP. Normally, the following rules of engagement apply:

- (1) Attack aircraft identified as hostile.
- (2) Attack aircraft committing a hostile act.

c. Organization. Each divisional and separate cannon battalion is authorized one air defense (Redeye) section composed of a section headquarters and three Redeye teams. The teams are allocated on the basis of one per firing battery. Each cannon battalion that is organic to a separate brigade is authorized one air defense (Redeye) section composed of a section headquarters and four Redeye teams. The fourth team is allocated to the headquarters and headquarters battery.

d. Redeye Defense Planning. Redeye defense planning normally is accomplished by the air defense (Redeye) section headquarters. Regardless of the level at which planning is accomplished, the following factors must be considered:

- (1) The mission and disposition of the defended unit(s) and the commander's guidance.
- (2) The order of priority for defense of elements and installations.
- (3) The air and ground threat.
- (4) The availability of Redeye teams and firing positions.
- (5) The capabilities and limitations of the Redeye weapon.
- (6) The command and control criteria.
- (7) The coverage provided by and the locations of, other air defense means.

e. Defense of Unit in Position. Redeye teams depend on visual means for detection and identification of targets. The firing positions selected must provide for maximum observation and unobstructed fields of fire along the most likely air avenues of approach, permit engagement of the enemy before he can strike the defended unit, and provide crew safety and local ground security. One gunner in each team should maintain continuous surveillance of the surrounding airspace, alternating with the other gunner as required. In some instances, the gunners may be separated, with one serving as observer to warn the other of approaching aircraft. During periods of intense activity, each gunner may carry a Redeye weapon, thereby doubling the rate of fire or providing coverage of additional avenues of approach.

Each unit should prepare an SOP for air defense based on army and theater guidance. The SOP should incorporate provisions for early warning compatible with the mission and communications capability of the unit. Provision should also be made for augmenting Redeye fires with those of organic, non-air-defense weapons, primarily automatic weapons capable of delivering large volumes of direct fire.

f. Selection of Firing Positions. The primary consideration in the selection of Redeye firing positions is the capability to prevent hostile aerial interference with the ground plan of maneuver (mission) of the defended unit. When the teams are controlled by the air defense section headquarters (general or direct support) (para 3-2k), the section leader initially selects tentative firing positions by map reconnaissance. When time permits, he makes a ground reconnaissance. When the teams are controlled by another commander (attachment), the commander normally designates the initial firing position areas. In either case, the Redeye team chief makes the final selection based on the terrain and on command guidance. When the disposition of the defended unit and the number of available Redeye teams permit, the overall Redeye defense should provide some degree of overlapping fires between teams. Factors that must be considered in selecting team firing positions for Redeye weapons are as follows:

- (1) Observation and fields of fire along the most probable low-altitude avenues of approach of hostile aircraft but with maximum retention of an all-round capability.
- (2) Ground security.
- (3) The mission and disposition of the defended unit and the commander's guidance.
- (4) Accessibility of the firing positions.
- (5) Cover and concealment.
- (6) Safety of the crews.

g. Defense of Unit During Movement.

(1) The Redeye section leader normally accompanies the headquarters of the defended unit during a move in order to best position himself to maintain control of the Redeye teams. At times, especially when a Redeye section is supporting mechanized/armored operations, the section leader must consider moving the section headquarters by echelon. When the Redeye section headquarters is required to displace independently to maintain the required degree of control over the teams, the section sergeant will normally remain as liaison with the battalion operations section while the section leader and radio operator/driver displace.

During movement, Redeye teams may occupy successive positions along the route (leapfrogging), may be dispersed throughout the column, or may accompany the elements of the unit that have priority for defense.

(2) In a battery column, the battery commander should place one team member near the front of the column and one near the rear, each with a portion of the available missiles. Primary and secondary zones of responsibility should be assigned, all-round observation should be assured, some missiles should be unpacked and ready, and the gunners should be ready to dismount quickly.

(3) During a movement in which more than one team is involved—e.g., a battalion move—the teams should be dispersed in such a manner that coverage is weighted toward the front and rear. Disposition of the teams within the column is directed by the column commander. Teams may be directed to occupy critical points along the route to improve the coverage; however, road conditions or column speed may preclude leapfrogging.

(4) A 1/4-ton truck with trailer provides the required mobility in most situations. In some situations, the requirement for mobility may necessitate temporarily dropping the trailer and carrying a reduced load of missiles in the truck. When use of tracked vehicles is mandatory, the vehicles must be obtained on a priority or share-the-ride basis.

h. Control. The Redeye gunner normally is permitted to engage all aircraft positively identified as hostile or committing hostile acts within the criteria set forth in guidance by higher headquarters. The gunner normally attacks the aircraft on his own initiative, since time and space limitations do not permit the gunner to request permission to fire. Unit commanders may impose restrictions on Redeye fires to prevent compromising the unit location. Under no circumstances will a unit commander allow freedom to fire beyond that established by higher authority. The gunner has no authority to deviate from the established weapons control status, rules for engagement, identification criteria, and rules for target selection.

i. Firing Doctrine. A low-performance aircraft is engaged by one gunner firing a single missile, assessing the results, and firing additional missiles as required. A high-performance aircraft may be simultaneously engaged by both gunners, each firing until the aircraft is destroyed or is beyond engagement range.

6-33. Active Air Defense Measures (Crew-Served and Individual Weapons)

a. Concept.

(1) The threat posed by low-altitude aircraft may be partially countered by aggressive and discriminate use of a large volume of fire delivered by non-air-defense weapons (small arms and certain crew-served weapons).

(2) The individual and collective right of self-defense against hostile aircraft must be stressed. Exercise of this right does not require use of specialized communications and is independent of theater air defense rules for engagement.

(3) Indiscriminate use of non-air-defense weapons must be prevented for tactical and safety reasons, such as the possible disclosure of friendly positions which may not have been detected by the enemy, and the safety of friendly forces. Engagement of hostile aircraft in immediate self-defense will be most frequent and should be emphasized in training.

(4) Perimeter and other security personnel should be assigned specific sectors in order to insure all-round air defense surveillance.

b. Rules Of Engagement. In the absence of orders to the contrary, individual weapon operators will engage attacking aircraft. Engagement of all other hostile aircraft will be on orders issued through the normal chain of command and will be supervised by unit leaders. *Nothing in this rule is to be taken as requiring actions that may be prejudicial to accomplishing the primary mission of the battery.*

c. Techniques.

(1) *General.* For air defense purposes, aircraft may be classified as low-speed and high-speed. Low-speed aircraft include helicopters and liaison, reconnaissance, and observation fixed-wing propelled aircraft. High-speed aircraft include all other propeller aircraft and all jet fixed-wing aircraft.

(2) *Engagement of low-speed aircraft.* In accordance with the rules for engagement, low-speed aircraft are engaged with massed, aimed fire delivered at the maximum rate of fire. Aerial gunnery techniques generally applicable to all small arms and automatic weapons are contained in ~~FM 23-12~~ and ~~FM 23-65~~. **7C 23-44**

(3) *Engagement of high speed aircraft.* In accordance with the rules for engagement, high-speed aircraft are engaged with *massed* fire delivered at the maximum rate and *aimed* well

in front of the aircraft and above its flight path in order to force it to fly through a pattern of fire. The technique does not require a careful estimation of aircraft speed and the required lead.

(4) *Use of tracer ammunition.* The highest possible proportion of tracer ammunition should be used in automatic weapons. This technique provides a deterring and disruptive effect.

d. *SOP For Employment of Non-Air-Defense Weapons.* A battery SOP should include, but not be limited to—

(1) *Applicability.* (Operators of designated weapons.)

(2) *Relation to the primary mission.* (Primary mission is never prejudiced.)

(3) *Relation to passive air defense.* (The necessity for aggressively engaging hostile aircraft is balanced with the requirement to place in proper perspective the tactic of withholding fire to preclude disclosure of position.)

(4) *Authority to engage.* (Authority to en-

gage attacking aircraft delegated to individual weapon operators and authority to engage all other hostile aircraft on order through unit chain of command, subject to the rules of engagement and the rules for withholding fire.)

(5) *Rules of Engagement.* (Normally, self-defense only against all attacking aircraft and those positively identified enemy aircraft which pose a threat to the unit.)

(6) *Rules for withholding fire.* (When ordered. When not positive that aircraft are actually attacking or when not positive that aircraft are hostile. When friendly aircraft or troops are endangered.)

(7) *Criteria for selection of position.* (See FM 44-1 for guidance relative to selection of positions.)

(8) *Firing techniques.* (Lead and superelevation. Massed fire. Maximum rate of fire. *Maximum* use of tracer ammunition.)

(9) *Unit training requirements.* (Motivation and discipline. Gunnery. Aircraft recognition is discussed in FM 44-30.)

CHAPTER 7

COMMUNICATIONS

Section I. COMMUNICATIONS MEANS

7-1. General

To render effective and responsive fire support, the field artillery battalion (battery) requires efficient communications with the supported or reinforced unit, with higher and lower field artillery units, and with adjacent field artillery units. Efficient communications are also necessary for effective control of battalion (battery) activities. Appropriate sections of the battalion (battery) contain the personnel and equipment for the installation, operation, and maintenance of the communication system.

7-2. Means of Communication

The principal means of communication employed by the battalion (battery) are wire, radio, and messenger. Visual and sound signals may also be used for short distances. Visual communication includes communication by means of lights, flags, panels, pyrotechnics, and hand and arm signals (FM 21-60). Sound communication includes communication by means of whistles, horns, sirens, gongs, and other noisemaking devices. Sound communication is usually reserved for alarm signals (app C). For further information concerning communications, see FM 6-10. *TC 6-10-1,*

7-3. Wire System

a. The wire system is vital to the signal communications of the field artillery battalion (battery). Installation of the wire system is begun as soon as the situation permits. Wire communication is generally more reliable than other means, is relatively easy to install and operate, and is less subject to electrostatic disturbances and enemy interception and jamming than radio communication. The disadvantage of wire communication is the vulnerability of the wire lines to tapping by enemy patrols and to damage from shelling, bombing, and vehicular traffic. When time permits, wire lines should be buried or installed overhead and alternate lines provided to all positions. For

further information on wire communication, see FM 6-10.

b. The nature and extent of the wire system installed at a position depends on the length of time the position is occupied. Wire circuits parallel radio nets so that an alternate system is available if one system fails.

c. Priorities are established for installation of wire circuits. Highest priority is always given to the installation of circuits necessary for the conduct of fire, fire direction, fire support coordination, and communications with supported elements. Local and administrative lines are installed as time permits.

7-4. Radio System

a. The radio communication requirements of division artillery battalions are generally the same as those of nondivisional artillery battalions. The internal communications required by the battalion are those used for the internal command and administration of the battalion to include facilities for—

- (1) Fire direction.
- (2) Dissemination of intelligence warnings and meteorological data.
- (3) Collection of information.
- (4) Tactical and administrative control.

b. The external communications required by the battalion are those used for communication with higher headquarters, reinforced, supported, and adjacent units to include facilities for—

- (1) Receipt of fire missions and requesting additional fire support from higher headquarters.
- (2) Receipt of warnings.
- (3) Exchange of information and intelligence.
- (4) Receipt of meteorological data, accurate time, and for coordination of survey.
- (5) Receipt of tactical orders and for command and administrative supervision.

(6) Receipt of fire missions from reinforced units, when applicable.

(7) Coordination of fire support with supported units.

(8) Communication with reconnaissance and armed aircraft.

c. Each field artillery battery operates in the battalion command/fire direction net, FM, and in the battalion fire direction net, FM. If a battalion operates more than one fire direction net, FM, each battery is directed to operate in a specific net. Batteries capable of providing nuclear fire support may also operate in a command/fire direction net, AM, SSB, RATT, with its associated on-line cryptographic facilities. The radio system used varies with the type of battery, the mission, and the channels and equipment available. Radio communication is particularly important in fast-moving situations, during displacements, and in the initial stages of an occupation of position. As the wire system is installed and expanded, some traffic

load may be shifted from the radio system to the wire system. If the wire system fails or if the traffic load becomes too great, the radio system is again used. One radio at each battery monitors the battalion command/fire direction net, FM. Other radios should remain on a standby basis for immediate use if the wire system fails. Adequate communications security practices and procedures must be employed to prevent enemy direction finding, interception, and analysis. Additionally, defensive measures must be employed to counter attempts at imitative deception and jamming whenever the enemy uses these means in an attempt to confuse or disrupt communications.

d. For detailed information on field artillery battalion and battery radio systems, nets, and equipment, see FM 6-10. For additional information on radio systems and electronic warfare, see FM 6-10, FM 24-18, ~~FM 61-24~~, and FM 32-20. For information and guidance on communications security, see FM 32-5.

Section II. COMMUNICATIONS EMPLOYMENT

7-5. Tactical Employment of Communications

a. *General.* The communications system to be established in any tactical situation is a command decision based on the mission, the facilities and time available, and the commander's estimate of needs. The communication system always includes an alternate means of communication.

b. *Offense.* In the offense, the extent to which the communication system is developed varies with the development of the action. In preparing for an offensive action, the field artillery commander usually directs establishment of complete communication facilities. Wire is employed whenever time permits. If radio silence or listening silence has not been imposed, radio is employed extensively in rapidly moving situations. The radio system can be rapidly established, and it affords communications for command, control, and coordination during the movement.

c. *Defense.* In the defense, the communications system is completely developed if time permits. The wire system is expanded by installing duplicate lines on alternate routes and installing lateral lines to adjacent units.

d. *Marches and Bivouacs.* Communications during marches are necessary for warning, march control, and transmission of tactical and

administrative orders and information. In a bivouac or assembly area, wire communication is installed to the perimeter defense whenever time permits.

7-6. Stability Operations

During stability operations, the field artillery battery, especially when operating independently, may be required to monitor the fire control net of the area coordination center and may provide equipment and personnel to assist in operating the center. The capability of the insurgent force to intercept, analyze, exploit, and interfere with friendly communication systems must not be discounted. Proper training in electronic counter-countermeasures coupled with good signal security practices will help defeat enemy attempts to exploit friendly electronic systems. Further, it may be necessary to integrate the radio nets of the battery with host country tactical and territorial defense artillery nets within the area of operations. Provisions should be made to accommodate the entry of host country armed forces, and paramilitary forces and other allied units into the fire request net. Additional information concerning communications in stability operations is contained in FM 31-23.

7-7. Combat Requirements

Field artillery communications for fire support and fire support coordination include facilities for requesting and controlling conventional

field artillery fires, nuclear fires, tactical air support, and naval gunfire. For details, see FM 6-10, FM 24-1, FM 61-100, ~~FM 61-24~~, and FM 100-26.



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CHAPTER 8

OBSERVATION, FIRE SUPPORT AND LIAISON

Section I. THE FORWARD OBSERVER

8-1. General

a. Responsibilities. The responsibilities of the field artillery forward observer are to locate targets, adjust fire, advise the supported unit commander on the employment of the field artillery, plan fires, assist in fire support coordination, maintain continuous observation of the zone, report all target and intelligence information, and keep his own battalion (field artillery) informed of the situation, the plans, and the location of the supported unit. *- All FM 6-20*

b. Assignment. Forward observers are authorized according to the appropriate tables of organization and equipment (TOE). A field artillery battalion assigned a tactical mission of direct support provides a forward observer to each maneuver company of the supported force which normally is a brigade. The forward observers assume the responsibilities stated in *a* above. A forward observer should be able to work with any field artillery battery participating in any type operation.

c. Status. The forward observers of a direct support field artillery battalion are normally employed with the supported maneuver companies of a brigade. The forward observers of a reinforcing or general support-reinforcing battalion normally man field artillery observation posts (OP). They may, however, perform forward observer duties for the reinforced direct support field artillery battalion. The status of the forward observer with a maneuver company, whether it be attached, or otherwise, is determined by the tactical situation. Attachment is not the normal status for the forward observer assigned a mission to support a maneuver company. However, when the forward observer is attached to a maneuver company, he performs those duties directed by the supported maneuver commander.

d. Coordination. The operations of the forward observers of a direct support field artillery battalion are coordinated by the battalion fire support (liaison) officer at the supported

maneuver unit. This coordination may also be accomplished by the field artillery battalion S3.

e. Zone of Observation. The zone of observation of a forward observer is the zone of action of the supported maneuver unit or the zone of observation of the parent battalion.

f. Location. The forward observer from the direct support field artillery unit normally remains close to the supported maneuver unit commander. If the forward observer is not, or cannot be physically present with the supported maneuver unit commander, he insures that communications are provided between him and the supported commander. Forward observers manning battalion observation posts are normally positioned by the parent battalion.

g. Terms, Definitions, and Procedures. Information pertaining to the forward observer's call for fire, subsequent corrections, and radiotelephone procedures for the conduct of fire is contained in FM 6-40, *And FM 6-40-5.*

h. Instructions for Forward Air Controllers. The United States Armed Forces have ratified the details of agreement of STANAG 2134, Offensive Air Support Operations. When US Forces operate with NATO Armed Forces, the instructions in STANAG 2134 will be followed. Chapter 6 of STANAG 2134 contains instructions for forward air controllers. Some nations, including the United States, have found it expedient to train officers of the land forces to perform the functions of forward air controllers. The details of agreement and chapter 6 of STANAG 2134 are contained in appendix F of this manual for the use of field artillery forward observers trained as forward air controllers.

i. Communications Security. The requirement for extensive use of radio in adjusting artillery fires increases the probability of degradation or denial of friendly use of radio systems due to enemy jamming or deception. Unless all personnel are aware of the capabilities of electronic countermeasures, an enemy could block

radio communications used in calling for artillery fire, or, through deception, he could request a shift of fires onto friendly troops or installations. Defensive measures include the communications security practices discussed in FM 24-18 and FM 32-5.

8-2. The Forward Observer Functions and Duties

a. Before leaving his battalion area, the forward observer insures that his men and equipment are combat ready. He reports to the command post to obtain—

From the S2

(1) A supply of indexed maps and/or photographs.

(2) The enemy situation and locations of enemy installations.

(3) The observation plan and locations of battalion observation posts.

(4) The essential elements of information (EEI).

(5) The password or sign and countersign.

From the S3

(6) The overall tactical situation.

(7) The amount and type of artillery available.

(8) The quantity and type of ammunition available.

(9) The locations of registration points and targets.

(10) The location of the supported unit command post.

(11) Names and telephone numbers of persons (or units) with whom he must communicate.

From the Communication-Electronics Officer

(12) The communication plan.

(13) The status of wire and radio communications.

(14) Extracts of communications-electronics operation instructions (CEOI).

b. En route to the supported maneuver unit command post (or battalion OP), the forward observer should carefully note the terrain features and the routes of communication. All members of his section must become familiar with the route so that, if necessary, they can return without him.

c. On arrival at the supported maneuver battalion command post, the forward observer from a direct support field artillery battalion reports to the maneuver battalion field artillery fire support (liaison officer) and obtains—

(1) The situation and tactical plans of the

supported unit, including the locations and plans for employment of the supported unit organic weapons.

(2) The location of the company (troop) for which he will provide field artillery support.

(3) Further details relating to the information listed in a above which were not available at the time of his departure.

d. On arrival at the supported company (troop), the forward observer from a direct support field artillery battalion reports to the company (troop) commander, and—

(1) Determines the disposition of the company (troop) on the ground.

(2) Obtains plans for attack, defense, and patrols.

(3) Determines the local security and medical evacuation SOP of the company (troop).

e. During his tour of duty, the forward observer—

(1) Determines, on the ground, the locations of the registration points, the targets, and the final protective fires as required.

(2) Establishes and maintains communications with the supported maneuver company (troop), with the field artillery battalion fire direction center, and with the artillery fire support (liaison) officer.

(3) Keeps his own unit informed of his location and field of observation, the locations of the supported forces, and any changes in their disposition.

(4) Reports all known enemy dispositions and movements, including the actions of enemy aircraft.

(5) Reports exactly what he observes or is told authoritatively, not what he infers or deduces from his observation.

(6) Briefs the members of his section on the situation and on the supported maneuver company (troop) SOP.

(7) Plans field artillery fires and advises and assists the supported company (troop) commander in fire support planning.

(8) Observes and adjusts fires, reports the results of these fires, and prepares a terrain sketch of his area when required. FM 6-40 contains details on preparation of the sketch and diagram, and other useful techniques.

(9) Prepares and dispatches a visibility diagram to the artillery fire support (liaison) officer. See 6-40 and FM 21-26 for details on preparation of the terrain sketch and the visibility diagram.

(10) Within his capabilities, coordinates ob-

servation and fires with other forward observers in the vicinity.

(11) When qualified and authorized, observes and directs other types of fire support.

(12) Obtains locations of supported unit's radars, night observation devices, and unattended ground sensors.

8-3. Forward Observer With a Company in the Offense

a. General. In offensive operations, the forward observer should operate as close as possible to the supported unit commander. Normally, this will be within voice contact of the company commander and/or his FSCOORD. The commander receives reports from all elements of his unit and will know where artillery support is most urgently needed. The forward observer is able to assist the supported unit in the offense by—

(1) Planning fires on enemy locations and on critical areas, as necessary, to protect the reorganization of the supported unit following the seizure of an objective.

(2) Adjusting fire on enemy positions and fortifications, targets of opportunity, and other targets designated by the supported unit commander.

(3) Rendering close and continuous field artillery fire support for the maneuver of the company.

(4) Providing information regarding the enemy.

(5) Providing additional channels of communication.

b. The Movement to Contact and the Reconnaissance in Force. During these operations, the forward observer is concerned primarily with the maintenance of his communications and with fire planning. He periodically checks his communications with the FDC, the fire support (liaison) officer (when appropriate), and other observers in accordance with battalion standing operating procedures (SOP). When time permits, the forward observer should plan fires on critical points along the line of march. He should consider the use of periodic marking rounds to provide a ready reference point of a distinctive terrain feature easily identifiable on the ground and map.

c. The Coordinated Attack, Exploitation, and Pursuit. When contact with the enemy has been made, the forward observer positions himself where he can best observe the actions of the supported unit, conduct fire missions, and advise the supported unit commander on field

artillery matters. If circumstances require that an observation post be established at a point distant from the supported unit commander, the reconnaissance sergeant should perform the actual observation so that the forward observer can remain with the supported unit commander. The forward observer will coordinate with the supported unit commander before firing missions in an attack, since the supported elements may have advanced to within an unsafe distance from the target. He should also exercise caution in adjusting fire at topographical crests when reverse slopes may be occupied by friendly forces.

d. The Consolidation. When the objective has been taken, the forward observer—

(1) Notifies the fire direction center or fire support officer (liaison officer).

(2) After consulting with the supported unit commander, plans and, when appropriate, fires protective targets (defensive fires) during the critical phase of unit reorganization.

(3) Maintains continuous observation and fire support.

8-4. Forward Observer With a Company in the Defense

Field artillery defensive fires are planned to break up attack formations, to repel an enemy assault, and to limit or thwart penetrations. The forward observer plans fires forward of, on, and behind the supported unit's defensive position. On-call defensive fires are fired only with the supported commander's approval and when required. Subsequent firing is used to confirm firing data. The fires of weapons that will fire final protective fires (FPF) normally should be adjusted as soon as the ground locations of the FPF have been selected. He transmits the order to fire the FPF when directed by the maneuver commander. The fire of each weapon should be individually adjusted if time, the situation, and the availability of ammunition permit. As soon as practicable, the FO should construct a visibility diagram in at least two copies. One copy is used by the FO to assist in increasing his accuracy, and most important, one copy is forwarded through the artillery fire support (liaison) officer to the DS field artillery battalion S2 so that the battalions can establish which areas are not under ground surveillance.

8-5. Forward Observer in the Retrograde

When the supported unit is conducting a retrograde, the forward observer remains with the

supported unit commander. However, he may direct the remainder of his party to displace with the withdrawing forces in order to maintain continuity of observation and fire.

8-6. Forward Observer With a Company in Patrol Action

a. Patrol Support. Providing fire support for friendly patrols is an important function of the forward observer. The forward observer may accompany a patrol when it consists of the major portion of the supported unit. If the company operations plan indicates that he should accompany a patrol, he must advise his FSO accordingly, and he should then leave a member of his section with the remainder of the supported unit during his absence. He furnishes complete information on all patrols to his battalion FDC.

b. Planning. Planning for field artillery support of a patrol must be coordinated before the patrol begins. Planning includes the following steps:

(1) The supported unit commander notifies the forward observer of the size of the patrol, the

times of departure and return, the mission, the routes, and any special instructions.

(2) When the supported unit commander requests field artillery support for the patrol, the forward observer contacts the patrol leader and personally plans the support. When possible, the forward observer and the patrol leader examine the patrol route on the ground, and plan fires on critical areas.

(3) The forward observer gives the patrol leader the numbers and locations of the planned targets.

(4) The forward observer fires in targets if the situation requires.

(5) The patrol leader informs the forward observer of the communication instructions of the patrol, including emergency signals.

(6) The forward observer makes arrangements to maintain communications with the patrol, when necessary.

c. Armored Patrols. When the forward observer accompanies an armored patrol, he is furnished armor-protected transportation by the supported unit. If dismounted infantry accompany the armored patrol, the forward observer must be prepared to adjust fire from either the armored vehicle or the ground.

Section II. OBSERVATION

8-7. General

a. Purpose. In addition to the observation performed by the forward observers with the maneuver companies, other observation is performed by the field artillery for target acquisition, for adjustment and surveillance of fire, and for gaining information. Observation may be visual or may be performed by electronic means. The discussion in this section concerns only visual observation. For information concerning other types of observation, see FM 6-20, FM 6-40, and FM 6-121.

b. Observer Parties. Survey personnel performing the target area survey normally install and man two OP's for the field artillery battalion. If additional observer parties are needed, they can be organized from qualified personnel available in the field artillery battalion (battery). In stability operations in which field artillery fires may be used to support the defense of fixed military and civilian installations, forward observer parties may include indigenous military and civilian personnel unskilled in forward observer procedures.

8-8. Selection of Locations for Observation Posts

The location selected for the observation post should provide the observer with a wider, deeper field of view than that of the forward observer. The observation post should be located to supplement the observation of the forward observers and to add depth to the zone of observation. In the selection of the location for an observation post, consideration should be given to ease of concealment, availability of routes, and ease of installation of communications. Landmarks or prominent terrain features should be avoided. Alternate positions for observation posts should be selected. These positions should be developed as much as the situation permits to include preparing terrain sketches and visibility diagrams, laying wire to the positions, and camouflaging. In a fast-moving situation, plans should be made for the timely displacement of observation posts to prevent interruption of continuous observation over the battle zone. For details of the construction of several types of observation posts, see FM 5-15.

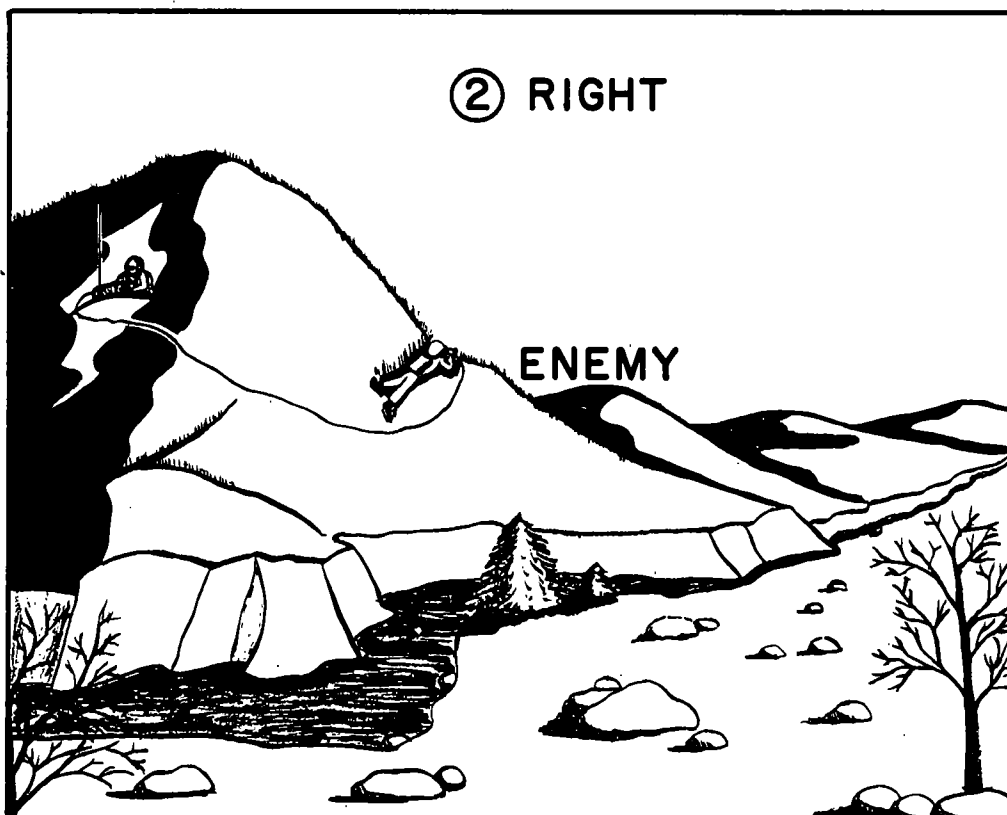
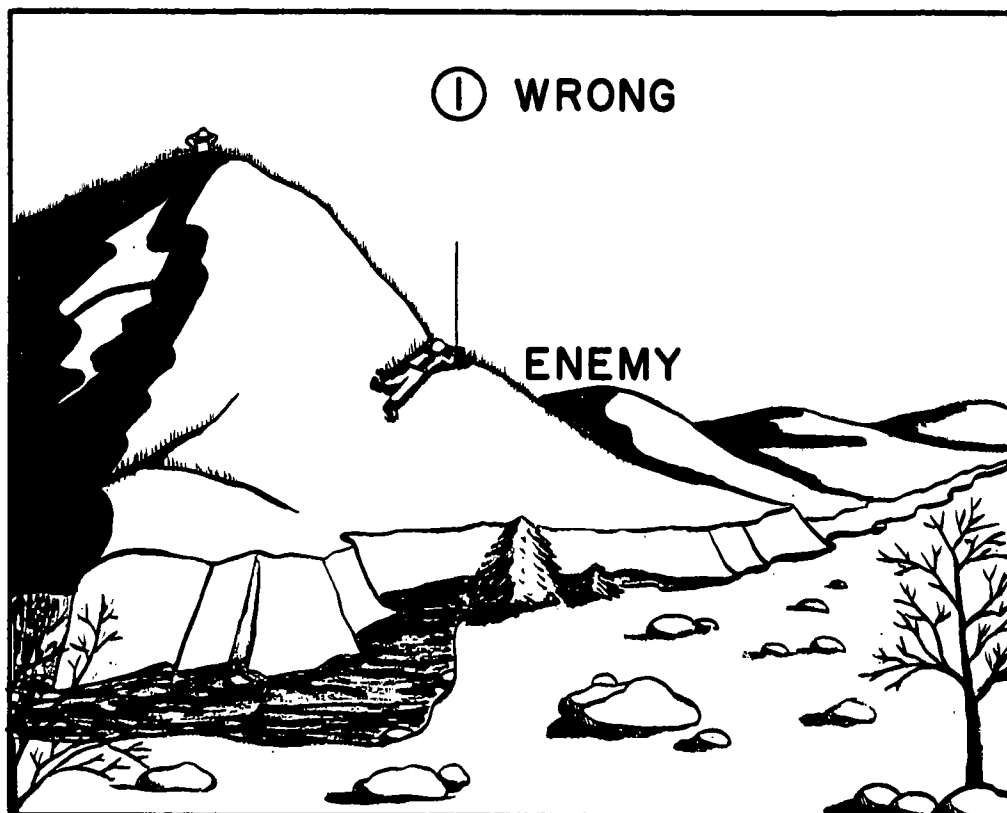


Figure 8-1. Reverse slope position for observation post.

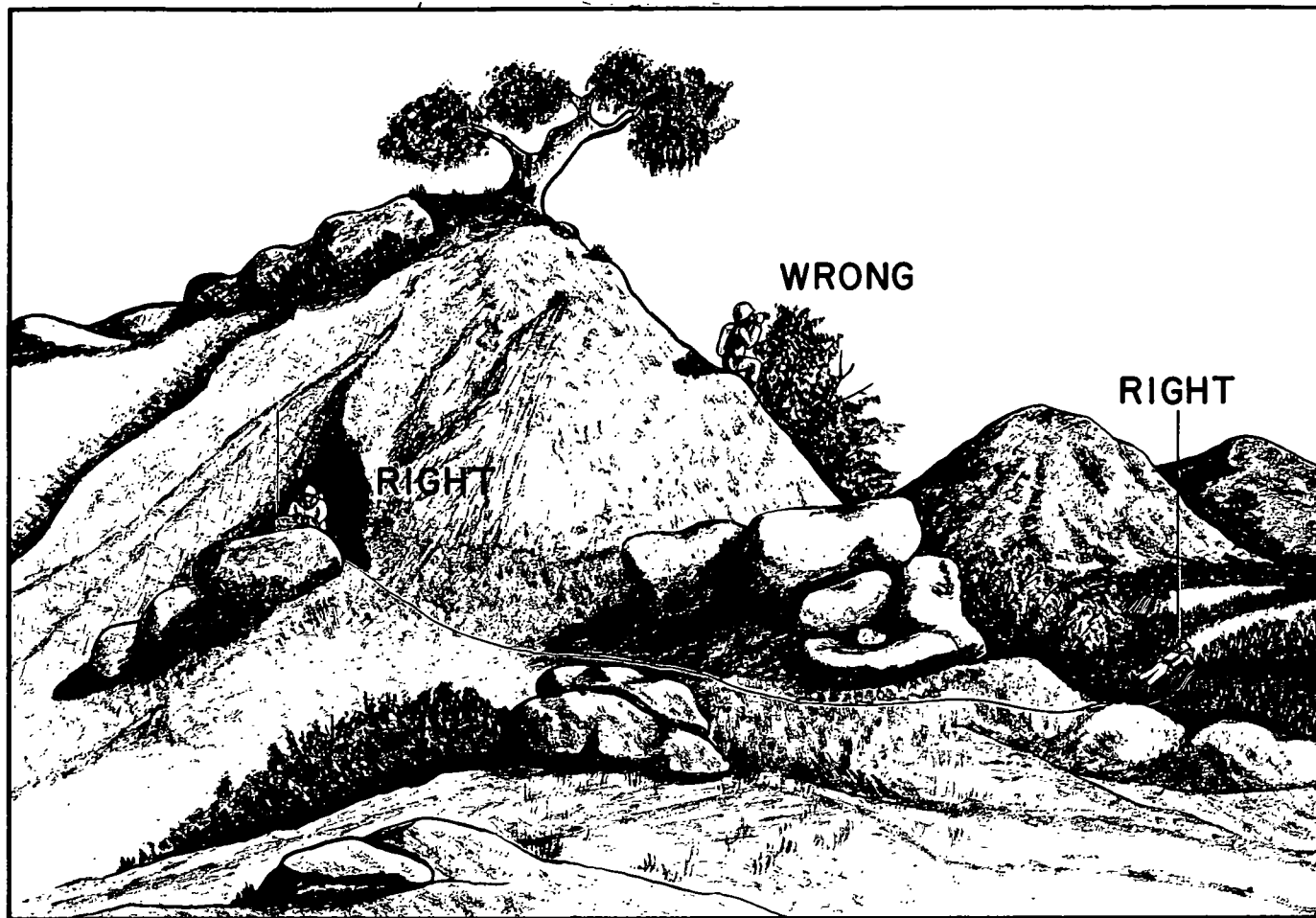


Figure 8-2. Forward slope position for observation post.

8-9. Reverse Slope Position

a. Advantages. The advantages of a reverse slope position (fig 8-1) for an observation post are as follows:

- (1) It may be occupied during daylight.
- (2) It allows greater freedom of movement.
- (3) It facilitates installation, maintenance, and concealment of communication equipment.
- (4) It affords protection from direct fires.

b. Disadvantages. The disadvantages of a reverse slope position from an observation post are as follows:

- (1) It usually affords only a limited field of view to the front.
- (2) Enemy fire adjusted on the topographical crest may neutralize the observation post.

8-10. Forward Slope Position (Military Crest)

a. Advantages. The advantages of a forward slope position (fig 8-2) for an observation post are as follows:

- (1) It may not be neutralized by enemy fire on the topographical crest.

(2) It affords a good field of view to the front.

(3) It affords a background which facilitates concealment.

b. Disadvantages. The disadvantages of a forward slope position for an observation post are as follows:

(1) It usually must be occupied under cover of darkness, and the location of the observation post cannot be changed during daylight without risking disclosure of the position.

(2) Daylight maintenance of wire communication is difficult unless lines can be laid along a concealed route.

(3) Radio communication may be difficult; it may be necessary to remote the radio to the reverse slope.

(4) It affords no protection from direct fire.

Section III. COORDINATION AND PLANNING OF FIRE SUPPORT

8-11. General

Fire support coordination and fire support planning are discussed in this section.

a. The supported maneuver commander through combat orders, policies, priorities, or decisions, employs all fire support available to his command.

b. The senior field artillery officer, or his representative, at each level of command from maneuver battalion through corps, is the fire support coordinator (FSCOORD) and principal advisor to the commander on fire support matters.

c. At echelons below division, fire support functions are performed at the fire support coordination center (FSCC), an informal agency normally located at the command post of the supported maneuver battalion or brigade. The personnel involved in fire support perform the functions concurrently with their regularly assigned duties.

d. Fire support coordination at division level and above is performed by the FSCOORD or his representative in the fire support element (FSE) of the division tactical command post and division main command post. For detailed information on fire support coordination, see FM 6-20.

e. The coordination of fire support at company level is the responsibility of the company commander. He may personally perform all actions associated with this responsibility, or he may designate an individual to act in his behalf. The company mortar platoon leader, the forward observer from the direct support field artillery unit, the rifle platoon leaders, the battalion mortar forward observers, and the senior representative of other fire support means advise the company commander during planning, coordination, and employment of these fires.

f. The United States Armed Forces have ratified the Details of Agreement of STANAG 2099, and CENTO STANAG 2099, Fire Coordination in Support of Land Forces. When US forces operate with NATO and CENTO Armed Forces, the instructions given in STANAG 2099 will be followed. The complete details of agreement and instructions of STANAG 2099 are contained in FM 6-20.

g. The United States Army has ratified the Details of Agreement of STANAG 2082, Relief of Combat Troops. When US Army Forces operate with NATO Armed Forces, the instructions given in STANAG 2082 will be followed. The complete details of agreement and instructions of STANAG

2082 are contained in FM 6-20.

h. The United States Armed Forces have ratified the Details of Agreement of STANAG 2104, Friendly Nuclear Strike Warning to Armed Forces Operating on land. When US Armed Forces operate with NATO Armed Forces, the instructions in STANAG 2104 will be followed. The complete details of agreement and instructions of STANAG 2104 are contained in FM 6-20.

i. The United States Armed Forces have ratified the Details of Agreement of STANAG 2029, Method of Describing Ground Locations, Area and Boundaries. When US Armed Forces operate with NATO and SEASTAG Armed Forces the instructions in STANAG 2029 will be followed. The complete details of agreement and instructions of STANAG 2029 are contained in FM 6-121 and FM 61-100.

8-12. Fire Support Planning

a. Upon receipt of orders, the force commander announces his mission and planning guidance to his staff and commanders. His guidance and general plan for the employment of available fire support, to include special weapons, are included in the planning guidance.

b. The force fire support plan is based on the fire support portion of the commander's concept of operation. The fire support plan is the announcement of the commander's decision concerning the employment of the fire support means (artillery, air, naval gunfire) that are available to, or that are in support of, the force. The fire support plan may or may not be a formal written document. At company level, the plan of fire support is often issued orally or in written fragmentary form.

c. When written, the fire support plan will be listed as fire support in paragraph 3 to the operation order and is disseminated to subordinate units.

d. The FSCOORD at each echelon is responsible for the preparation of the fire support plan. The procedures for developing this plan are generally as follows:

(1) The fire support coordinator, or his representative, develops a tentative plan to fulfill the fire support requirements set forth in the commander's concept of operation. He coordinates with the force S3 to obtain any additional fire support necessary, and with the force S3 air or airspace management element for field artillery use of airspace.

8-13. Fire Planning

a. Fire support planning may be either informal or formal. Informal fire support planning goes from lower headquarters to higher headquarters culminating at the Direct Support artillery battalion for execution. Whereas, formal fire support planning goes from higher headquarters to lower headquarters also culminating at the direct support battalion. In order to execute these various plans submitted to the direct support battalion, the field artillery support plan may be prepared. The field artillery support plan is normally informal and will consist of that information needed or a battery to engage various targets. The information may be sent to the battery by wire, radio or messenger. If the field artillery support plan is prepared as a formal document, it will consist of three parts: a written portion, indicating field artillery available to the force, available supply rates and other pertinent information needed to control field artillery fires; a target list; and appropriate schedules.

b. Inherent in each tactical mission is fire planning in support of a maneuver force. Based upon their inherent responsibility and the force commanders guidance, the field artillery support plan will be prepared by the artillery headquarters and approved by that same headquarters. This document formal or informal is to be used within the field artillery to provide that support required by the maneuver commander.

c. Before beginning his fire planning, the field artillery forward observer must know the mission and tactical plan of the supported unit, the supported commander's plan for the use of fire support, and the requirements of the force for fire support relayed to him by the FDC or the maneuver battalion fire support (liaison) officer.

d. The artillery forward observer plans fires on targets and potential targets to support the supported unit in accomplishing its mission. Targets are selected by various means such as the forward observer's own observation, map inspection, known enemy tactics, and the desires

of the supported unit commander. Fires may be planned on targets outside the supported unit's boundaries. However, these targets will not be fired without coordination with the adjacent units unless the targets are on the enemy (forward) side of the coordinated fire line.

e. The detail with which target lists are prepared by forward observers depends on the time available, the extent and accuracy of target locations, the type of operation in which the force is engaged, and the requirements of the supported commander.

f. Target lists of planned targets are sent by the forward observers to the field artillery battalion fire support (liaison) officer at the supported battalion for coordination and consolidation and for addition of other fires, as necessary. The battalion fire support (liaison) officer sends the coordinated lists of targets for field artillery fires to the direct support battalion fire direction center, and to the brigade fire support coordination center (FSCC) for clearance and possible substitution for other means of fire support.

g. The FDC consolidates and coordinates field artillery targets as necessary, adds fires desired by the force commander and his staff, and develops the plan of field artillery fires for the force.

h. The forward observers are informed of any action taken on their target lists submitted to higher artillery echelons. For example, target designations near boundaries may be changed to coincide with plans of adjacent units, or fires desired by the force commander may be added to the plan. The forward observer informs the supported company (troop) commander of any changes.

i. When a field artillery unit is assigned a tactical mission of reinforcing another unit, its fires are planned by the reinforced unit unless otherwise specified. Normally, the fires of a field artillery unit with the mission of general support-reinforcing are planned by the force artillery headquarters unless otherwise directed.

Section IV. LIAISON

8-14. General

Liaison is that contact maintained between units to insure mutual understanding and unity of purpose and action. The principles of, and responsibilities for, liaison are contained in FM 100-5.

8-15. Field Artillery Liaison

Field artillery liaison must be established and maintained as follows:

- a. By the supporting unit with the supported unit.
- b. By the reinforcing unit with the reinforced unit.
- c. With adjacent units and other headquarters when directed.

8-16. Types of Liaison

a. *Command Liaison.* Command liaison is the personal contact between the supporting commander and the commander of the supported, reinforced, or adjacent unit.

b. *Representative Liaison.* The liaison officer is the field artillery commander's personal representative to the unit with which liaison is established. Frequent rotation of liaison officers is inadvisable. However, in situations requiring prolonged absence of liaison officers, it may be desirable to rotate them back to their parent units so that they may keep up with the current situation, plans, and policies of their own command.

c. *Staff Liaison.* Staff liaison is normally maintained at battalion or higher levels. It consists of the working contacts between members of a staff and their counterparts on the staffs of other organizations. These contacts facilitate mutual exchange of information.

d. *Responsibility to Establish Liaison.* When liaison is not reciprocal, responsibility for establishing it is governed by the following principles:

- (1) From left to right.
- (2) From superior to subordinate.
- (3) From supporting to supported.

8-17. Liaison Duties of the Fire Support Officer

a. Upon assignment, and at each change in the mission of the supported or reinforced unit, the fire support officer should—

- (1) Obtain all available information concerning the mission and the situation of his

own unit, and of the unit with which he maintains liaison.

- (2) Know the plan of prearranged fires, and the target numbers assigned.

- (3) Know the locations of registration points.

- (4) Know the status of ammunition.

- (5) Know the amount of additional fire support that is available to the supported force.

- (6) Know the plan of observation to include the assignment of forward observers; the availability of air observers, and the location, call sign, and radio frequency of the observers.

- (7) Know his unit's (field artillery) plan for displacement.

- (8) Secure the necessary maps and aerial photographs.

- (9) Arrange with the field artillery battalion communications-electronics officer for necessary extract of CEOI.

- (10) Know existing fire coordination measures, e.g., No-fire lines (NFL), fire coordination line (FCL), and procedures for obtaining clearance to fire, when appropriate. *aw ch1*

b. Upon arrival at the command post of the supported unit, the fire support officer reports to the commander of the supported unit and informs him of the field artillery's plans, its location, and the amount and types of field artillery fire support available. He also establishes communication with his unit or checks the facilities already established.

c. Within his responsibilities for coordination of all fire support (para 8-18), the fire support officer performs the following specific liaison functions for his parent (FA) Battalion:

- (1) Keeps the supported or reinforced unit commander informed of the field artillery situation and capabilities. The fire support officer is the field artillery commander's representative and, as such, is an adviser to the supported unit commander on field artillery matters.

- (2) Keeps his commander informed of the location and plans of the supported or reinforced unit and of any changes in the plans.

- (3) Transmits requests for fires and for lifting fires.

- (4) Arranges for and insures a prompt exchange of enemy information between his own battalion and the supported or reinforced unit.

- (5) Makes visits to the field artillery battalion command post when conditions permit. During these visits, he gives the executive of-

ficer any data appropriate for inclusion in the unit report.

8-18. Duties of the Fire Support Officer

a. At the Maneuver Brigade. The direct support field artillery battalion provides liaison to the supported force headquarters and to its battalion-size subordinate echelons. Normally, the senior liaison officer of the direct support field artillery battalion is designated as fire support officer and he will represent the field artillery battalion commander at the supported brigade command post. Duties and functions of the fire support officer are as follows:

(1) Supervises and coordinates the activities of the fire support (liaison) officers with the maneuver battalions of the supported brigade.

(2) Functions as the fire support coordinator (FSCOORD) during the absence of the commander, and prepares the fire support ~~annex~~ ^{pk n}. Performs nuclear target analysis, and acts as adviser on matters pertaining to fire support.

(3) Accompanies the supported unit commander on reconnaissance when required.

(4) Normally remains with the supported unit even when the unit is in reserve.

(5) Keeps the commander informed of all patrols and air movements to include the number of personnel, time of starting, route, mission, return route, and expected time of return.

^{pk ch 1} (6) Coordinates the desired location of the no-fire line with the supported commander and reports the location to his parent unit.

(7) Coordinates the planning of unattended ground sensor fields with the maneuver unit S-2 and S-3, and his own battalion S-2 and S-3.

b. At the Maneuver Battalion. The direct support field artillery battalion provides liaison to the supported force headquarters and to the battalion-size elements of the brigade. The field artillery liaison officer assigned to a maneuver battalion as fire support officer is also a representative of the field artillery battalion commander. Duties and functions of the fire support officer are as follows—

(1) Performs duties and functions as listed in paragraph 8-17.

(2) Functions as full-time fire support coordinator (FSCOORD).

(3) Receives target lists from the forward observers through their supported commanders, resolves duplication of targets, consolidates lists with other targets planned at maneuver

battalion, and forwards the consolidated target list for field artillery fires to the fire direction center (FDC) of the direct support field artillery battalion for inclusion in the brigade's field artillery fire support appendix, and to the brigade FSCC for clearance and possible substitution for other fire support means. ^{see ch 1}

(4) Advises the maneuver battalion commander on matters pertaining to fire support.

(5) Supervises and coordinates the activities of the field artillery forward observers with the companies of the supported battalion and coordinates with the FSCOORD at maneuver brigade.

(6) Obtains locations of maneuver battalion radars.

(7) Reviews, consolidates, and forwards visibility diagrams to the DS field artillery battalion S2.

(8) Relays enemy and target information developed by the maneuver element to the DS field artillery battalion S2.

(9) Serves as a link between the DS field artillery battalion S2 and the supported unit for the exchange of intelligence data.

c. Fire Planning. For a detailed discussion of company and lower echelon fire planning, see FM 7-10 and FM 6-20.

8-19. Liaison Officer of a Reinforcing Field Artillery Battalion

The liaison officer of a reinforcing artillery unit keeps his commander informed of the situation and of the reinforced unit's fire plan and its plan of observation. In reporting the situation, he includes all available information since he may be his commander's only or primary source of information of this type. He keeps the reinforced unit commander informed of the situation of the reinforcing artillery, including changes in capabilities, ammunition status, and present or possible commitments, which may affect the reinforcing mission.

8-20. Liaison Officer of a General Support Field Artillery Battalion

Field artillery with a general support mission has no inherent responsibility for establishing liaison. However, higher headquarters can modify this mission to include liaison. In this event, the liaison officer performs appropriate duties as described in paragraphs 8-17 and 8-18 above. Frequently, he must serve as a technical adviser to the supported unit commander and be prepared to recommend appropriate field

artillery tasks. When possible, liaison with the closest DS battalion is desirable to provide latest information on the front line situation and plans of maneuver. Barring the foregoing, a radio monitoring the activities of the DS FA battalion provides useful information.

8-21. Liaison Officer of a Field Artillery Missile or Rocket Battalion

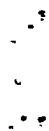
The liaison officer of a field artillery battalion (missile or rocket) is the battalion commander's representative and maintains close contact with higher or other headquarters as directed. He keeps the higher field artillery headquarters informed of the locations and the operational status of the elements of the battalion. He keeps

his commander informed of the current situation, of plans, and of pending displacements of the higher field artillery headquarters. He must be familiar with the detailed capabilities and limitations of all elements of the battalion in order to assist the higher field artillery commander in planning appropriate employment of the field artillery missile or rocket battalion.

8-22. Liaison Officer of an Aerial Field Artillery Battalion

The aerial field artillery battalion has no liaison officers on its TOE. Liaison officers will have to come from augmentation, or from within the battalion resources. For complete details, see chapter 4, FM 6-102.

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CHAPTER 9

MARCHES AND MOVEMENTS

Section I. GENERAL

9-1. General

a. The tactical employment of field artillery requires frequent and timely movements by cannon, rocket, and missile units. To be effective in providing the bulk of fire support, field artillery must have mobility equal to or greater than that of the supported force. The ability to move rapidly and efficiently is essential to the accomplishment of the artillery mission. A successful movement, such as a tactical motor march, places the field artillery unit at its destination at the proper time and in the required condition to accomplish the assigned mission.

b. Field artillery battalions and batteries should have a standing operating procedure (SOP) covering marches and movements. The SOP should include information on the coordination that must be affected with the military police for assistance in traffic control and with transportation movement representative for movement coordination matters. Proficiency in marching is attained through extensive planning, reconnaissance training and experience.

c. Detailed descriptions of the various types of movements and marches are given in the following field manuals:

(1) FM 55-30 and 55-31 include information on the organization of motor movements; the movement of personnel; and the planning of motor movement.

(2) FM 101-10-1 includes planning guidance for movements.

9-2. International Standardization Agreements

a. The United States Armed Forces have ratified the Details of Agreement of STANAG 2041, Operational Road Movement Orders, Tables and Graphs. When US Armed Forces operate with NATO Armed Forces, the instructions in STANAG 2041 will be followed. The applicable details of agreement and instructions of STANAG 2041 are contained in FM 55-30 and FM 61-100.

b. The United States Armed Forces have ratified the Details of Agreement of SEASTAG 2024, Military Road Traffic Lighting Regulations. When US Armed Forces operate with SEATO Armed Forces, the instructions in SEASTAG 2024 will be followed. The SEASTAG is implemented in FM 5-36 and FM 19-25.

c. The United States Armed Forces have ratified the Details of Agreement of STANAG 2154, Definitions and Regulations for Military Motor Movements by Road. When US Armed Forces operate with NATO, SEATO, and CENTO Armed Forces, the instructions given in STANAG 2154 will be followed. The STANAG is implemented in FM 55-30 and FM 61-100.

Section II. CLASSIFICATION OF MARCHES

9-3. General.

Troop marches are classified as either tactical or administrative. They are further subclassified according to the type of transportation means used, e.g., motor, rail, water, or air.

9-4. Administrative March

a. An administrative march is a nontactical movement conducted in an area of relative se-

curity such as the communications zone, or, under favorable conditions, in the rear area of the combat zone. The battery commander or the battery executive officer usually marches at the head of the column; the motor officer marches at the rear. The battery commander supervises the march by observing the vehicles as they pass and by patrolling the column. If signs such as "Convoy Follows" and "Convoy Ahead" are used, they should be placed on the permanent

lead vehicle and on the rear vehicle (not the maintenance truck). The maintenance section truck should not be considered part of the column. It follows some distance behind, since it will stop to assist any vehicle which falls out of the column.

b. The battery commander supervises the march of his column to insure that—

(1) Prescribed speeds and gaps between vehicles are maintained.

(2) The vehicles in the column are operating effectively.

(3) All vehicles are present or that the maintenance section is attending to disabled vehicles.

(4) March discipline is maintained.

c. During halts in an administrative march in areas where air attack is improbable, the vehicles usually close up in column to a distance of about 3 meters between vehicles and, if possible, pull off the road on the right access shoulder. The battery commander inspects his column at the halt to insure that—

(1) Guards, warning flags, caution lights, or flares are posted at the front and rear of the column at sufficient distances to give timely warning to traffic.

(2) All personnel dismount and exercise briefly. (This is very important in cold weather.)

(3) Drivers perform the required maintenance.

(4) Personnel of the maintenance section perform their duties.

(5) Vehicles rejoining the column regain their proper positions.

(6) Personnel observe cautions regarding oncoming traffic.

(7) The area of the halt is thoroughly policed prior to resuming the march.

d. When the battalion is participating in an administrative march, the battalion commander and his staff normally supervise the march.

9-5. Tactical March

A tactical march is a movement made under actual or simulated combat conditions. In addition to the principles governing administrative marches, the following principles apply to tactical marches:

a. The battery must be combat loaded and prepared to go into action from the march column at any time.

b. When contact with the enemy is imminent, reconnaissance for firing positions is continu-

ous. This is normally accomplished by the battery commander and his party, who precede the column.

c. Security against possible enemy action is emphasized. Use of airdropped or ballistically emplaced unattended ground sensors at possible ambush sites provides additional security. During halts, flank guards should be posted to protect the column from surprise attack. Vehicles must not close up at halts.

d. The battery executive officer normally commands the battery column during a tactical march. The maintenance section marches at the rear of the battery column.

e. ~~The cannon firing battery should be formed for the march with a command and fire control vehicle leading, cannons following immediately behind the lead vehicle, and support and administrative vehicles following the cannons.~~ This formation enables rapid entry into action during the march and orderly occupation of the position area. The rocket or missile battery should be formed for the march to provide maximum protection for the weapons, and rapid and orderly entry into action upon arrival at the position area. *For cannon firing battery march formation, see FM 6-50.*

f. In areas where enemy air attack may be expected, the following precautions must be taken:

(1) One or more air guards should be posted at each vehicle to give warning in case of attack.

(2) Vehicle-mounted machineguns must be ready for use. Machineguns provided for air defense of the march column are employed as outlined in FM 44-1.

(3) Vehicles must not close up at halts.

(4) Halts should be made in areas providing concealment or room for dispersion of vehicles.

(5) During halts, all personnel except those manning air defense weapons should dismount and disperse off the road.

g. The entire column should not be halted because of the breakdown of a single vehicle. When a vehicle breaks down, the equipment and personnel essential to the accomplishment of the mission must be transferred from the disabled vehicle to some other vehicle with minimum delay. *It is especially important that all cannons be kept with the column at all times.* The driver of a disabled vehicle stays with the vehicle until it can be repaired or replaced. The crew of the maintenance vehicle must not confine their attention to a disabled vehicle that cannot be repaired in a short time. Such a vehicle should be reported to battalion or, if the

battery is operating as a separate battery, to the unit furnishing logistical support. The maintenance truck should proceed along the march route as soon as possible in order to be available to the whole battery.

h. A battery may march as an element of the advance guard during the movement of a task force. When the battery has this mission, the battery commander and reconnaissance party

usually march with the advance guard commander. It is vital that at least a map reconnaissance be performed prior to the march to detect critical areas such as dangerous crossroads, inadequate bridges, and areas where vehicles would not be able to disperse off the road. If possible, route reconnaissance by vehicle or aircraft should be made before the march.

Section III. TYPES OF ROAD MARCHES

9-6. General

The types of road marches are infiltration, close column, and open column. The type of march selected for a field artillery battalion depends on the following: *C in FM 6-50*

- a. Mission of the battalion.
- b. Visibility.
- c. Road conditions, to include traffic and available road nets.
- d. Enemy air activity and location of the enemy.

9-7. Infiltration

When a unit moves by infiltration, vehicles are dispatched individually or in small groups at specified intervals. This type move is least vulnerable to hostile observation and attack. However, it has the disadvantage of greater time length and more difficult column control.

9-8. Close Column

In a close column, the march unit is formed as

compactly as possible consistent with driving safety. The time gap between the tail of one march unit and the head of the following unit is usually 5 minutes. Ease of control and reduction of column length are the advantages of this method. The disadvantages are that the close column is vulnerable to enemy attack and the strength and nature of the column are quickly apparent to enemy observers.

9-9. Open Column

An open column is the usual march column, particularly for a tactical march. The column commander prescribes the distance between vehicles which is generally 100 to 150 meters. The advantages of this type of road march are reduced driver fatigue, improved vision on dusty roads, ease in passing individual vehicles, and ease in dispersing vehicles as a passive defense against air attack. The disadvantages are the greater time length of the column and the increased difficulty in control.

Section IV. PREPARATION FOR MARCHES

9-10. Orders

The details given in a march order depend on the tactical and traffic situation and the state of training of the unit, and the completeness of the unit SOP. Details included in the SOP can be omitted in the march order. The order may be supplemented by strip maps, circulation maps, sketches, and march tables. The principal items that should be included in a march order are as follows:

- a. Situation.
- b. Mission and destination.
- c. Organization for the march, including the order of march, the composition of the column, and the commander of each serial, march unit, and special detail.
- d. Instructions to air observers, reconnaissance and quartering parties, and route marking and traffic control groups to include place and

time of departure, mission, special instructions for communications, and time of rejoining the main body.

e. Instructions to the main body to include start point, control points, and release points; times for arrival at, and clearance of, those points; rate of march; and route of march.

f. General instructions regarding restrictions on use of roads; maximum speed of march units and individual vehicles; alternate routes and detours; restriction on use of lights; and the time, duration, frequency of, and precautions during halts; and special instructions regarding march discipline and defense against air or ground attack.

g. Communication instructions regarding the use of radio, messengers, and whistle or horn signals, pyrotechnic signals, and communica-

tion instructions pertaining to the opening and closing of command posts.

9-11. Route Reconnaissance

Route reconnaissance may be performed from maps, aerial photographs, aerial reconnaissance, or by actual inspection of the route on the ground. Reconnaissance by one of these means should precede every march. A map, aerial photograph, or aerial reconnaissance should be followed by a ground reconnaissance whenever possible. Route reconnaissance is performed to determine—

- a. The most suitable route consistent with the terrain and possible enemy action.
- b. Alternate routes and available cover and concealment.
- c. The condition of roads, grades, fords, bridges, overpasses, underpasses, and tunnels; the location of minefields, roadblocks, defiles, contaminated areas, and other obstacles; and the locations of detours to avoid them.
- d. The capacity and size of bridges, overpasses, underpasses, and tunnels.
- e. Sites for halts, bivouacs, and assembly areas, and requirements for route marking.
- f. The time required to complete the march.
- g. Possible firing positions.

9-12. Quartering Party

The purpose of a quartering party is to arrange for local procurement of supplies, services, and shelter; and to locate and lay out bivouac areas prior to the arrival of the column. The party may be used to perform route reconnaissance and pioneer work and to prepare plans for the defense of the area.

9-13. Loading Plans

The purpose of a loading plan is to prescribe efficient loading of personnel and equipment for movement. Loading plans for motor movements should be available in all batteries. If a loading plan is not prepared or specified by battalion headquarters, each battery should prepare its own. (There is no standard loading plan that will meet the requirements of all batteries.) The personnel responsible for devising the loading plan should consider the mission, personnel, SOP, and equipment of the battery. Steps in preparing the loading plan include—

- a. Examining the battery table of organization and equipment (TOE) to determine the personnel, equipment, and vehicles authorized for each section.

- b. Examining all non-TOE property that must be transported by the battery. This equipment should be carried by the section responsible for its use.

- c. Listing the personnel and equipment to be carried in each vehicle. Equipment should be located so as to facilitate identification under blackout conditions.

- d. Conducting practice loadings to test the validity of the loading plan and adjusting the procedures when necessary.

- e. Providing a copy of the loading plan to each chief of section. A loading list for each vehicle should be extracted from the loading plan and kept in the vehicle at all times.

- f. Loading weapons so that they can be dispersed throughout the column and will be available for immediate use.

9-14. Battalion Control

Normally, the battery marches and bivouacs as an element of the battalion. When marching with the battalion, the battery conforms to the orders and instructions issued by the battalion commander. A battalion warning order is issued to the battery prior to the march. The battery commander coordinates preparation for the movement; outlines to his subordinates the necessary preparatory measures to include loading of vehicles, vehicle maintenance, feeding and fueling arrangements for the march, and preparation of advance parties required by the battalion; and issues special instructions not covered by the unit standing operating procedures. The battery commander's march order is based on the battalion order. Section chiefs and drivers are briefed on the routes and destination, and each driver is issued a strip map. The battery column then moves to cross the start point (SP) at the prescribed time.

9-15. Battery Control

- a. When the battery is detached from the battalion and is operating independently, the battery commander assumes the responsibility for planning, reconnaissance, marking of routes, and execution of marches as prescribed for the battalion commander.

- b. When attached to a maneuver element, the battery executes the march as directed by the commander of the unit to which the battery is attached. In general, the same techniques apply as those used by the battery when marching as part of the battalion.

Section V. CONDUCT OF MARCHES

9-16. General

a. To insure good march discipline, officers and noncommissioned officers ride where they can best control and supervise the march of their units. The senior person in each vehicle is responsible for insuring that all orders concerning the march are carried out. He usually rides beside the driver. The vehicles in which commanders and other designated personnel ride may be required to pass other vehicles in the column in order to supervise the move. All other vehicles maintain their positions until otherwise directed or until the circumstances dictate otherwise.

b. Aircraft should be used to assist in column control and for the purpose of radio relay.

c. Each vehicle commander is responsible for watching for signs, markers, signals, and other traffic. He is also responsible for insuring that the driver is alert at all times.

d. On two-lane roads, vehicles stay well to the side of the road. Marching units which have exceptionally wide or heavy loads may have to use other designated routes which can accommodate the loads or may require that oncoming traffic be restrained until the column clears. Warning signs or devices must be conspicuously displayed on oversize vehicles.

9-17. Route Marking

The route marking detail marks the route by posting signs and/or personnel to insure that the column arrives at its destination without delay. Personnel used as route markers are normally posted in pairs for individual protection. They are posted at dangerous road intersections, at rail crossings, and wherever cautious driving is required. When the route marking detail is formed, the members of the detail are given general instructions. When posted as route markers, they are given specific instructions for the post. The duties of the route marker are comparable to those of a sentry. Provisions are made to insure the prompt pickup and return of the route markers to their units when they are no longer needed. Details concerning traffic control and route marking are presented in FM 55-30 and FM 19-25.

9-18. March Discipline

March discipline is attained through training and through internal control within the marching unit. The specific objective of march discipline

is to insure intelligent cooperation and effective teamwork by march personnel. The following are essential to the success of a march:

a. Immediate and effective response to all signals.

b. Prompt relaying of all signals.

c. Obedience to traffic regulations and to the instructions of traffic control personnel.

d. Use of cover, concealment, camouflage, dispersion, radio silence, blackout precautions, smoke, and other protective measures against air, ground, armor, or chemical, biological, and nuclear attack.

e. Maintenance of correct speeds, and positions of, and gaps between, vehicles within the column.

f. Use of correct procedures for handling disabled vehicles.

g. Ability to recognize route marking signals/signs.

9-19. Communication

Communication during the march is ordinarily regulated by the SOP of the battalion or battery. During administrative marches, messengers, battalion control points, and radios may be used. During tactical marches, listening silence may be imposed on radio communication. If radio communication is permitted during a tactical march, rather than clear text messages that might reveal the location of the column, ~~prearranged codes~~ ^{arranged codes} and indexed maps should be used, the minimum number of messages should be transmitted and the messages should be short in order to reduce the effectiveness of enemy direction-finding activities. The person leading the battery column should know the location of the battery commander at all times so that messengers may be directed to him.

9-20. Control Identification of Vehicles

a. *General.* It is often desirable to mark or otherwise designate vehicles of the column for internal and external control. Such identification is subject to local conditions and is usually specified in the SOP. The minimum number of markings necessary for column control should be used. Temporary markings should be easily removable.

b. Unit Flags and Symbols. For administrative purposes, headquarters vehicles may display guidons. Message center vehicles may be designated by distinctive symbols or panels displayed on the front, rear, top, and sides of the vehicles. For security reasons, guidons may be cased and symbols or panels covered or removed.

c. Marking of Vehicles. Marking of vehicles

will be prescribed in the ~~SOP, SSI~~, or unit SOP (AR 746-1 and TB 746-93-2).

d. Special Markings on Vehicles.

(1) Ambulances and other vehicles provided exclusively for medical purposes will be marked in conformity with the rules of the Geneva Convention.

(2) Priority vehicles will be marked as prescribed in FM 55-30.

Section VI. SUPPORT OF SECURITY FORCES

9-21. Advance Guard

a. General. Field artillery must provide support for the advance guard. Factors which determine the strength, disposition, and positions of the supporting artillery include the size and mission of the advance guard, the distance from the main body at which it will operate, the terrain, the enemy capabilities, and the amount of field artillery available to the main force.

b. Strength and Disposition. The amount of field artillery support provided the advance guard depends on the amount available to the entire force and on the existing situation. If a battalion is the sole field artillery supporting the main body, one of its firing batteries normally marches in support of the advance guard and the main body. When the advance guard is marching at a distance that is beyond the range of the field artillery with the main body, it may be necessary to attach the supporting field artillery to the advance guard. Forward observation and liaison are provided by the field artillery.

c. Positions.

(1) Planning for future positions for field artillery in support of the advance guard is accomplished by designated personnel (reconnaissance parties) who are positioned well forward in the march column. Selection of position areas for the artillery is accomplished by the artillery commander, forward observer, or fire support (liaison) officer. Artillery supporting the advance guard must not occupy positions from the march prematurely; however, when needed, it must go into action rapidly. Initially, communication is by radio, and voice and an observed firing chart is used.

(2) When contact is imminent and the advance guard has deployed, supporting field artillery may move by bounds from one position to the next. When more than one battery is in support of the advance guard, units move by bounds by echelon.

One echelon moves forward while the other(s) remain in position ready to fire.

9-22. Rear Guard

a. Strength. The rear guard normally requires supporting field artillery because of its mission. When available, self-propelled weapons are preferred. The amount of artillery support provided depends on many factors, including the size and mission of the rear guard, the amount and types of weapons available, and the existing situation. If the distance between the rear guard and the main body is excessive, supporting field artillery may be attached to the rear guard.

b. Disposition and Positions. The commander of the field artillery supporting the rear guard usually marches with the rear guard commander. The artillery marches between the rear guard and the main body. The principles governing the selection and occupation of positions for the field artillery supporting the rear guard are similar to those for the field artillery supporting the advance guard.

9-23. Flank Guard

The flank guards are normally supported by field artillery with the main body. If the distance between a flank guard and the main body is prohibitive, it may be necessary to attach field artillery to the flank guard. The principles which apply to field artillery support for an advance guard also apply to support for a flank guard.

9-24. March Outposts

When a column halts during a tactical march, security detachments organize march outposts. Normally, the artillery does not occupy positions during halts of short duration. If the halt is to be of long duration, such as for a bivouac, the artillery occupies positions from which to deliver supporting fires when needed. For security measures while in bivouac, see chapter 6.

Section VII. SECURITY DURING THE MARCH

9-25. General

Field artillery is particularly vulnerable to attack while on the march. Vulnerability increases when the unit is moving into or out of a position and when it is confined to a road by steep banks, bridges, or mud. Field artillery units must be alert for attacks during the march. Each battery SOP should include plans for defense and for counterattack from the march column. The plans should provide for coordination with other march units for mutual support.

9-26. Hostile Artillery Fire

During the march, the ~~battery~~ ^{unit} can take little action against hostile artillery fire other than to report it to higher headquarters. Selecting routes to avoid dangerous areas, using camouflage, moving by open column or infiltration, practicing communications security, and moving under cover of darkness or during other periods of reduced visibility are passive means of defense.

9-27. Air Attack

If the situation permits, units may march at extended intervals or by infiltration as a passive defense against air attacks. When the mission, time, terrain, and weapon allocation permit, forward air defense weapons should be positioned at critical points along the route of march in advance and should be interspersed within the column. Bridges, defiles, passes, and other locations at which an air attack could halt the entire column are considered critical points. The weapons positions for air defense should be on, or as close as possible to, the critical points but should provide for observation, unobstructed fields of fire, and mutual support. When occupation of critical positions is impracticable, all weapons are interspersed within the march column with emphasis on the lead and rear elements and application of mutual support requirements. Aerial guards must be appointed, and maximum use must be made of organic automatic and individual weapons. Principles of employment and characteristics of forward area weapons are contained in FM 44-1. If the terrain permits, the battery should pull off the road, disperse, and direct the fires of all weapons on the attacking aircraft. If the terrain does not permit dispersion, as in a defile, the column should continue the march

until it can disperse, halt, and take up more active defense (FM 23-17).

9-28. Roadblocks

When reconnaissance or security elements report a roadblock, the information should be relayed to the battalion and the column should be rerouted. If the battery is halted by a roadblock, it should use such force as is necessary to clear the roadblock, including ~~direct or~~ indirect fire by the field artillery pieces, concentrated fire by available automatic weapons, and direct or flanking attack by a security force from the battery. Roadblocks are usually mined. An attempt to crash through them with vehicles before checking for mines may result in unnecessary loss of equipment and personnel, and a complete blocking of the road by disabled vehicles.

9-29. Ambush

a. General. An ambush is often employed in conjunction with a roadblock. If the battery is subjected to a surprise attack while moving, the battery commander must make a rapid estimate of the situation and determine his course of action. *executive officer*

b. Planned Field Artillery Fires. Artillery fire should be planned at possible ambush locations, and the escorting force should maintain communication with the supporting field artillery. The escorting force must monitor the unattended ground sensors employed at possible ambush points to insure early warning, and to call for delivery of planned fires. Members of the escorting force must be trained to call for and adjust fires. When elements of the escorting or reaction force are required to operate off the road in reaction to an ambush attempt, fire should be shifted to enemy withdrawal routes and rallying points.

c. Ambush With Roadblock. When an ambush is employed in conjunction with a roadblock, the column should halt, pull off the road, disperse under available cover, and take positive offensive action. Direct fire should immediately *see ch 1* be placed on the attacking forces. The pieces nearest the roadblock should begin to reduce the obstruction by direct fire. All available automatic weapons and small arms must be employed. The battery security force may attack as infantry to hold off the attacking force. When the roadblock is cleared, the battery fights its way clear of the ambush.

d. Ambush Without Roadblock. When an ambush is not employed in conjunction with a roadblock, the battery commander ~~may attempt~~ to move his unit clear of the affected area by keeping the unit in column and increasing the speed. When this course of action is followed, the moving column should place the maximum amount of small arms and automatic fire on the attackers. The battery should not become engaged with a stronger force or pursue the enemy if he withdraws. An immediate report of the enemy contact should be made to the next higher command.

e. Ambush at Night. If an ambush takes place at night, illumination is essential. Searchlights, artillery illumination shells, and flares should be readily available. Illumination denies the enemy one of his most valuable assets—darkness.

f. Ambush Briefing for Convoy Security. Convoy personnel should be indoctrinated in the procedures and means that will enhance their own security. These include weapons, ammunition, and equipment to be carried; the rules of engagement; and the action to be taken in case of ambush or vehicle breakdown. The procedures should be established by unit SOP, and should be based on the specific area and local conditions. Close coordination must be effected between logistical units and military

police and combat units responsible for their security.

g. Vehicle Gap. The gap between vehicles is determined by the convoy commander. The gap is based on road conditions. It should provide for effective control by the escorting force and, at the same time, for necessary dispersion. In mountainous areas, drivers should be cautioned against closing the gap on uphill grades, as these are known to be possible ambush areas.

h. Convoy Speed. Excessive speed is not a deterrent to an ambush; it may be a liability to the convoy commander. Speed should be consistent with road conditions along the specified route.

9-30. Tank-Infantry Attack

If the battalion or battery is attacked by tanks supported by infantry, the battalion (battery) commander must immediately direct all his firepower against the attacking force to prevent his unit from being overrun. ~~Direct fire from artillery pieces is effective against both tanks and infantry. The lightweight antitank weapon and the rocket launcher are particularly effective against tanks at short range. These fires, supplemented by the fires of all available small arms and automatic weapons, constitute the best protection against a tank-infantry attack.~~

Section VIII. HALTS AND ASSEMBLY AREAS

9-31. General

Halts are made at regular intervals or at selected sites to rest the personnel, service the vehicles, and check the loads. Short halts will normally last 10 minutes and take place every 2 hours, 10 minutes before the hour. Halts for feeding and refueling are usually from 45 minutes to 1 hour in duration. During active operations, wooded areas and winding roads offer the best halting places, since they provide concealment and do not present a straight line for attack by enemy aircraft. Halts should be made where vehicles can be dispersed off the road. Crossroads, railroads, and other similar places should be avoided, and no part of the column should stop on steep grades or bridges. Relief of personnel must be considered in selecting a place to halt. Villages and towns should be avoided. Columns should be halted to provide 200 meters of clear view for approaching traffic at both ends of the column.

9-32. Types of Halts

a. Short Halts. In areas where there is little danger of enemy air attack, the vehicles may close on the leading vehicle for servicing and inspection. In a combat area, vehicles are halted in concealment when possible. If no concealment is available, vehicles are widely dispersed to make them an unprofitable target for enemy aircraft. In halting, vehicles should stop as far to the right as possible. In areas known to be recently occupied by the enemy, vehicles should remain on the traveled surface until a search for mines has been made. Personnel remain off the road to the right of their assigned vehicles, staying clear of the traveled portion of the road at all times. When parked off the road, the vehicles should be headed in the direction of the subsequent movement. During short halts, the drivers and assistant drivers perform the prescribed inspection and maintenance. Guards are posted at each end of the

halted column for traffic control. Security measures for short halts are the same as for marches.

b. Long Halts. When a field artillery unit makes a long halt during a march, it usually occupies an assembly area.

9-33. Assembly Area

When the battery is to go into an assembly area, a quartermaster party under battalion control is sent ahead of the column. The quartermaster party arranges details of supply, selects specific areas for the elements of the battery, and receives the unit at the assembly area. On arrival at the assembly area, the battery commander supervises the prompt and orderly clearance of his vehicles from the road and the arrangement of the vehicles within the assigned area. He inspects the battery arrangement, security measures, and sanitary provisions made by the quartermaster party and makes any necessary changes. He checks to see that all vehicles have arrived or that the maintenance section is aiding those that have not arrived. He insures that after-operation maintenance is being performed on the vehicles.

Section IX. MOVEMENT BY RAIL, WATER, OR AIR

9-36. Preparation

a. When the battery moves by rail, water, or air, it normally moves as an element of the field artillery battalion or with a supported unit. In any case, the battery receives detailed instructions in the form of a movement order or in the form of pertinent extracts from the movement order. A warning order alerts the battery and furnishes sufficient information of the impending movement for the battery to make plans and take the necessary preliminary action.

b. It is the responsibility of the battery commander to see that the battery is in the prescribed state of readiness at the time indicated in the movement order. The movement order will specify which equipment is to be left at the home station, which is to be preshipped, and which is to accompany troops. The exact details for packing, crating, marking, and loading equipment and processing paperwork will also be given in the movement order.

c. The battery commander makes frequent, detailed inspections to insure that the clothing, equipment, and materiel of his unit meet the serviceability standards set forth in the move-

9-34. Security in Assembly Area

The battery bivouac area is organized for defense as discussed in chapter 6. Batteries equipped with weapons that have a direct fire capability employ these weapons and all available automatic weapons and small arms to provide all-round fire coverage of the bivouac area. Priorities for the organization of a bivouac area are relatively the same as those for the organization of a firing position. Cover, camouflage, communications security, electronic security, and dispersion are especially important in bivouac areas.

9-35. Sanitation During the Halt and in an Assembly Area

During the short halt, sanitation is only a minor problem. Refuse and trash should be buried as a security measure and to avoid contaminating the area. During long halts or in an assembly area, latrines and garbage pits are constructed immediately. Areas are kept clean, and refuse and garbage are burned or buried. When the area is evacuated, all fires are put out, the site is thoroughly policed, and the latrines and garbage pits are closed and marked accordingly.

ment order. The battery commander may obtain assistance from the representatives of the combat service support unit.

d. Equipment logbooks should be packed and secured with the equipment to which they pertain (AR 220-10).

9-37. Movement by Rail

a. General. Field artillery battalions (batteries) may be moved by rail in whole or in part. Factors that govern the rail movement include the distance to be traveled, availability of railroad facilities, and priorities established by the tactical situation.

b. Responsibilities. Troop and equipment movements by rail are the joint responsibility of the unit being moved and the transport agency.

c. Functions of Key Personnel.

(1) The battalion S4 normally functions as the movement officer for the unit. He collects and compiles all information necessary for the preparation of the movement and coordinates with the transportation unit representative.

(2) The unit commander is responsible for

the entraining and detraining of personnel and equipment in accordance with the movement order.

(3) The unit staff is responsible for planning, supervising, and coordinating all movement activities.

(4) The designated train commander supervises all matters pertaining to the safety of personnel and freight enroute.

d. Movement Planning. Certain tables should be maintained by the unit for rail movement. Sample tables and instructions for their preparation are contained in FM 101-10-1.

e. References. FM 101-10-1 and 55-15 contain details relative to rail movement.

9-38. Movement by Water

a. General. Water is a primary means of transporting large numbers of personnel and large amounts of heavy equipment.

b. Types of Military Loading. The types of military loading most likely to be used by field artillery are—

(1) *Administrative loading.* Administrative loading makes maximum use of troop billeting and cargo spaces without regard for tactical considerations, unit integrity, or priority for unloading.

(2) *Combat loading.* Combat loading is used when opposition from the enemy is anticipated

upon debarkation. Combat loading insures unit integrity and maximum off-loading efficiency. Field artillery that is combat loaded can support the tactical plan upon debarkation.

c. Responsibilities. JCS Pub 3 states the responsibilities of the transport agency—the Military Sealift Command (MSC) or the US Navy.

d. References. FM 101-10-1 and 55-15 contain details relative to water transportation.

9-39. Movement by Air

a. General. Movement by air involves the transportation of field artillery units into an area to support combat operations or into an area that is inaccessible to other means of transport.

b. Types of Air Movements. An air movement may be tactical, administrative, or a combination of both, depending on the planned employment of the force being moved or the tactical situation at the destination.

c. Responsibilities. The Military Airlift Command (MAC) and the US Air Force are the agencies responsible for intertheater movements by air.

d. References. FM 57-35, 61-100, 101-10-1, 100-27, 1-100, and TM 55-450-15 contain details relative to air movement.

*Chapter 10 - Training (see Chapter 16,
FM 6-50.)*

APPENDIX A

REFERENCES

1. Field Manuals (FM)

	1-100	Army Aviation Utilization.
	3-12	Operational Aspects of Radiological Defense.
	5-15	Field Fortifications.
	5-20	Camouflage.
	5-36	Route Reconnaissance and Classification.
	6-10	Field Artillery Communications.
	6-20	Field Artillery Tactics and Operations.
(C)	6-37	Field Artillery Battalion, SERGEANT (U).
(S)	6-39	PERSHING Organizations (U).
	6-40	Field Artillery Cannon Gunnery.
	6-61	Field Artillery Battalion, HONEST JOHN.
	6-102	Field Artillery Battalion, Aerial Field Artillery.
	6-121	Field Artillery Target Acquisition.
	6-160	Counterbattery Radar Set AN/MPQ-10A
	6-161	Radar Set AN/MPQ-4A.
	7-10	The Rifle Company, Platoons, and Squads.
	9-6	Ammunition Service in the Theater of Operations.
	12-4	Division/Separate Brigade Adjutant General.
	14-3	Comptroller Support in Theaters of Operation.
	19-25	Military Police Traffic Control.
	20-60	Battlefield Illumination.
	21-6	Techniques of Military Instruction.
	21-11	First Aid for Soldiers.
	21-20	Physical Readiness Training.
	21-40	Chemical, Biological, Radiological, and Nuclear Defense.
	21-41	Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare.
	21-48	Chemical, Biological, and Radiological (CBR), and Nuclear Defense Training Exercises.
	23-12	Technique of Fire of the Rifle Squad and Tactical Application.
	23-17	REDEYE Guided Missile System.
(C)	23-17A	REDEYE Guided Missile System (U).
	23-65	Browning Machinegun Caliber .50 HB, M2
	24-1	Tactical Communications Doctrine.
	24-18	Field Radio Techniques.
	29-23	Direct Support Maintenance Battalion (Nondivisional).
	29-30-1	Division Maintenance Battalion.
	31-10	Denial Operations and Barriers.
(C)	32-5	Signal Security (SIGSEC) (U).
(C)	32-20	Electronic Warfare (U).
	44-1	US Army Air Defense Artillery Employment.
	44-30	Visual Aircraft Recognition.
	54-2	The Division Support Command and Separate Brigade Support Battalion.

55-15	Army Transportation Reference Data.
55-30	Army Motor Transport Operations.
57-35	Airmobile Operations.
61-24	Division Communications.
61-100	The Division.
100-5	Operations of Army Forces in the Field.
100-10	Combat Service Support.
100-26	The Air-Ground Operations System.
100-27	US Army/US Air Force Doctrine for Tactical Air Lift Operations (AFM 2-50).
101-5	Staff Officers' Field Manual: Staff Organization and Procedure. <i>Operations</i>
101-10-1	Staff Officers' Field Manual: Organizational, Technical, and Logistical Data, Unclassified Data.
101-10-2	Staff Officers' Field Manual: Organizational, Technical, and Logistical Data Extracts of Nondivisional Tables of Organization and Equipment.
101-31-1	Staff Officers' Field Manual: Nuclear Weapons Employment Doctrine and Procedures.
101-31-3	Staff Officers' Field Manual: Nuclear Weapons Employment Effects Data.

2. Technical Manuals (TM)

3-210	Fallout Prediction.
3-220	Chemical, Biological, and Radiological (CBR) Decontamination.
5-200	Camouflage Materials.
5-311	Military Protective Construction (Nuclear Warfare and Chemical and Biological Operations).
9-1300-206	Care, Handling, Preservation and Destruction of Ammunition.
38-750	The Army Maintenance Management Systems (TAMMS).
55-450-15	Air Movement of Troops and Equipment (nontactical).

3. Technical Bulletin (TB)

746-93-2	Painting and Marking of Army Aircraft.
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4. Department of the Army Pamphlets (DA Pam)

21-1	Physical Fitness Program for Staff and Specialist Personnel.
600-8	Military Personnel Office Management and Administrative Procedures.

5. Joint Chiefs of Staff Publications

JCS Pub 1	Dictionary of United States Military Terms for Joint Usage (Short Title: JD). (With NATO & SEATO Glossaries Incorporated).
(C) JCS Pub 3	Joint Logistics and Personnel Policy and Guidance (U).

6. Army Regulations (AR)

50-5	Nuclear Surety.
220-10	Preparation for Overseas Movement of Units (POM).
220-58	Organization and Training for Chemical, Biological, and Radiological (CBR) Defense.
380-5	Department of the Army Information Security Program.
380-20	Restricted Areas.
(C) 380-40	Department of the Army Policy for Safeguarding COMSEC Information (U).
(C) 380-52	Nonmachine Cryptosystems and Authentication Systems (U).
380-55	Safeguarding Defense Information in Movement of Persons and Things.

385-63	Regulations for Firing Ammunition for Training, Target Practice, and Combat.
746-1	Color, Marking, and Preparation of Equipment for Shipment.

7. Tables of Organization and Equipment (TOE)

6-37	Field Artillery Battery, 155mm, Self-Propelled Armored Cavalry Squadron, Armored Cavalry Regiment.
6-100	Infantry Division, Artillery.
6-201	Headquarters and Headquarters Battery, Airborne Division, Artillery.
6-302	Headquarters and Headquarters Battery, Armored Division Artillery or Headquarters and Headquarters Battery, Infantry Division, Artillery or Headquarters and Headquarters Battery, Infantry Division (Mechanized) Artillery.
6-401	Headquarters and Headquarters Battery, Field Artillery Group.
6-501	Headquarters and Headquarters Battery, Corps Artillery.
6-701	Headquarters and Headquarters Battery, Division Artillery (Airmobile Division).
6-702	Aviation Battery, Division Artillery (Airmobile Division).
51-IG	Headquarters and Headquarters Company, Army.
6-725	Aerial Field Artillery Battalion Airmobile Division.



APPENDIX B

CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL TRAINING

B-1. General

a. Many nations in the world have the potential for including some phase of chemical, biological, radiological (CBR), and nuclear warfare in their military operations. The threat of such warfare will always be present in combat; therefore, all artillery units must include concurrent CBR and nuclear defense training in their overall training programs.

b. Artillery units must attain and maintain a capability for accomplishment of their missions while operating in a chemical, biological, or radiological environment. Standards of proficiency for units in CBR operations have been established and are described in FM 21-40.

c. This appendix is not intended to replace publications pertaining to CBR and nuclear defense training. Its purpose is to emphasize the specific application of this subject to the field artillery unit. For detailed information concerning CBR defense operations and training, see FM 3-12, 21-11, 21-40, 21-41, 21-48, and FM 100-30 (test); and TM 3-210.

B-2. Responsibility

The commander is responsible for the readiness of his unit to operate with maximum individual and unit effectiveness in a CBR and nuclear environment. Each officer and noncommissioned officer must possess full knowledge of and be capable of applying those principles, tactics, and techniques of CBR and nuclear defense applicable to his command level.

B-3. Training

a. CBR and nuclear defense training must be continuous. As in all other training, the commander is directly responsible for the training of his men. All personnel must be familiar with, and thoroughly trained in, all aspects of CBR and nuclear defensive operations. One of the greatest threats posed to operations in a CBR and nuclear environment is the possibility of shock and the resulting panic. Untrained soldiers, or those who have not had continuous CBR and nuclear defense training, may panic

at the first indication of attack. Panic can cause a whole unit to become ineffective, although the unit may not have sustained a single casualty.

b. Batteries and battalions are required to appoint school-trained officers, noncommissioned officers, and enlisted specialists on an additional duty basis to assist in the conduct of training for CBR and nuclear defense operations (AR 220-58).

c. Initially, CBR and nuclear defense training should be conducted in classes devoted only to the subject. These classes should be continued until all unit personnel are thoroughly familiar with the basic principles and have a good working knowledge of the subject. In these classes, the soldier must learn to—

- (1) Recognize the types of chemical agents and their effects.
- (2) Detect chemical agents.
- (3) Use and maintain his protective equipment.
- (4) Perform first aid.
- (5) Operate and maintain the equipment used in detecting chemical agents.
- (6) Give (sound) the alarm when chemical agents are detected.
- (7) Perform simple decontamination of himself and his equipment.
- (8) Shield himself from the effects of nuclear weapons.
- (9) Provide protection against enemy biological agents.

d. After personnel have acquired a basic knowledge of CBR warfare, instruction should be integrated into normal unit training. During the conduct of drills, field exercises, and training tests, CBR training must be included in such a way as to enable the soldier to use and develop the techniques he has learned in class. Practice will enable the soldier to maintain and increase his proficiency and will instill in him an awareness of the importance of CBR and nuclear defense. CBR and nuclear defense training must be accepted by soldiers as an integral part of training for modern warfare.

B-4. Defense Against Nuclear, Chemical, and Biological Attack

a. Defense measures that are used by personnel for protection against conventional warfare also provide protection against nuclear attack. In a nuclear attack environment, foxholes and other field fortifications should be strengthened and individual and unit equipment should be protected by digging it in or placing the equipment in a defiladed position. FM 21-40 and FM 3-12 furnish detailed information on nuclear defense and the operational aspects of radioactive fallout.

b. Individual defensive measures against chemical attack are the wearing of the protective mask, hood, and protective clothing. The mission-oriented protective posture is a flexible system of chemical-attack defense which allows the commander the option of weighing the threat of chemical attack against the mission. If the mission allows, the commander may order all personnel to be fully protected at all times and accept the degradation imposed by the protective equipment, or if the mission is critical, and the heat load high, the commander may ease the chemical protective requirements and risk taking chemical casualties. It must be stressed that current chemical agent delivery means can deliver a very high volume of agent in a short time period and defeat the masking time of individuals not masked before the attack started. FM 21-40 furnishes details on the mission-oriented protective posture.

c. The primary defensive measure against a biological attack is training, understanding, and individual preparedness. The protective mask and hood protect against biological agent aerosols, and they also protect the face and neck against bites from vectors. Prescribed immunization, appropriate sanitation, and use of food and drink only from approved sources aid in reducing the impact of a biological attack. FM

21-40 furnishes additional information on defense against biological agents.

B-5. Preparedness

a. A chemical, biological, or nuclear attack does not mean disaster for forces. The success or failure of such an attack will depend on the individual and the unit's state of preparedness, the conduct and reaction of individuals during an attack, and the unit's ability to regroup and continue the mission. The need for dispersion on the nuclear battlefield may require the field artillery batteries to fragment, and sections to operate away from their parent units for sustained periods of time. Enemy nuclear weapons may disrupt electronic communications. The mission-oriented protective posture allows the commander the options of adjusting the unit defensive posture to meet the threat; however, the commander must realize that casualties can occur from heat stress imposed by the protective measures. A unit must train and practice operations in a CBR and nuclear environment. The stresses imposed by the additional protective measures can, to a certain degree, be reduced by training and experience. The commander must completely understand and evaluate the options available to him and weigh the mission, the threat, and the protective measures so that the mission is accomplished with a minimum loss of personnel. If the commander and his unit are trained and their protective equipment has been maintained and is used, the employment of chemical, biological, and nuclear weapons by an enemy force will not necessarily prevent the unit from accomplishing its mission.

b. The protective uniform, when worn as a regular uniform or as a protective outer garment, will be worn as the commander directs based upon the threat during any posture of combat or training conditions.

APPENDIX C

STANDARDIZATION AGREEMENT 2047

C-1. General

Standardization Agreements (STANAG) are international (NATO, SEATO, CENTO) agreements designed to facilitate inter-allied operations. Upon ratification by the United States, a STANAG is binding upon US Armed Forces (entirely or with exceptions as noted). This appendix provides information of the STANAG implemented by this manual. Other STANAG which are not implemented by this manual but which are of general interest to the users of this manual are listed in appendix A.

C-2. STANAG 2047 (Edition No. 2), Emergency Alarms of Hazard or Attack

NATO UNCLASSIFIED DETAILS OF AGREEMENT AGREEMENT

1. It is agreed that the NATO Armed Forces, when operating on land, are to use the sounds and signals detailed herein to give emergency alarms of:

- a. Nuclear, biological or chemical (NBC) hazards and friendly nuclear strikes.
- b. Air attack.
- c. Ground attack.

DEFINITIONS

2. For the purposes of this Agreement the following definitions apply:

a. *Nuclear, Biological or Chemical (NBC) hazards and Friendly Nuclear Strikes.* The presence of biological or chemical agents or radioactive matter in the vicinity of friendly troops, whether as a result of enemy or friendly action.

b. *Air Attack.* The direct attack on friendly troops by aircraft or the imminent possibility thereof.

c. *Ground Attack.* Any attack in platoon strength or greater into the Sector (area) of a friendly unit.

d. *Friendly Nuclear Strike.* The employment of nuclear weapons by friendly forces which necessitates emergency alarms to friendly troops who might be affected.

e. *Local Alarm.* An alarm given in all cases when an attack or the presence of a hazard is detected. This alarm is given by any means available which produce a sound which cannot be confused with other sounds encountered in combat. Visual signals are also used.

f. *General Warning.* A warning given when the hazard or attack is expected to involve a large area. The general warning is sent out by all normal means of communication to all areas which may be affected.

g. *All Clear.* A signal given to indicate that the danger for which an alarm has previously been given no longer exists.

GENERAL

3. Sound and Visual Signals to be used for Emergency Alarms of Hazard or Attack, and the All Clear—

a. Are designated for use in installations, depots, headquarters or units of battalion size or smaller.

b. Are suitable for use in both forward and rear area.

c. Are given in all cases as soon as an attack or the presence of a hazard is detected. This alarm is given by means which cannot easily be confused with other sounds encountered in combat. Visual signals are also used.

d. Should normally be supplemented by the simultaneous use of radio and telephone.

e. Are generally limited in range and should be repeated swiftly throughout the unit area by all who hear or see the original ALARM.

4. *Civil Warning or Alarm Systems.* No attempt has been made to make the types of signals described in this Agreement coincide with the types of signals such as may be used in civilian defense.

5. *Visual Signals.* Visual signals are included in this Agreement to supplement the sound alarm under conditions when the latter may be lost due to other battlefield noises, or to replace them when the tactical situation does not permit the use of ground signals.

SIGNALS

6. Annex A (Details of Agreement) contains signals to be used for:

- a. Emergency alarm of hazard or attack.
- b. The All Clear.

7. The signals listed at Annex (DofA) are primarily intended to serve as alarms of enemy action. They may also be used, however, in emergency when friendly action could produce similar effects on friendly troops.

IMPLEMENTATION OF THE AGREEMENT

8. This STANAG will be considered to have been implemented when the necessary orders/instructions bringing into use the sounds and signals for emergency alarms described in this Agreement have been issued to the forces concerned.

ANNEX A (DofA) to APPENDIX C STANAG 2047 (Edition No. 2)

SOUND AND VISUAL SIGNALS TO BE USED FOR EMERGENCY ALARMS OF HAZARD OR ATTACK, AND THE ALL CLEAR

SIGNALS FOR EMERGENCY ALARMS OF HAZARD OR ATTACK

1. Nuclear, Biological, Chemical (NBC) Hazard

a. Sound Signals

(1) *By Percussion.* Rapid and continuous beating on any metal or any other object which produces a loud noise, such as bells, metal triangle, iron railings, iron pipes, empty shell cases, mess tins, steel helmets, vehicle bodies, etc.

(2) *Horns and Sirens.* (When not prohibited by National Authority.) A horn signal of three short blasts followed by two seconds of silence with the signal to be repeated for one minute. A siren of three long warbling sounds each separated by a silence.

(3) *Vocal Alarm.* Shout "Gas" or "spray" as appropriate, prior to donning respirator or protective mask.

(4) *Automatic Alarms.* Automatic alarms for the early and rapid detection of chemical

agents should, as far as possible, replace the improvised devices referred to above.

b. *Visual Signals.* Donning of the respirator and protective equipment, followed by such signals prescribed in national and local instructions.

2. *Air Attack* (notes 1 and 2 below).

a. *Sound Signals.* Continuous series of short blasts on a vehicle horn, whistle, bugle or other available wind instrument. Give a long blast on the siren, with a warbling sound (when not prohibited by National authority).

b. *Visual Signals.* Rapid crossing and uncrossing of the arms fully extended above the head.

3. *Ground Attack* (notes 1 and 2).

a. *Sound Signals.* Series of long blasts on a vehicle horn, whistle, bugle or other available wind instrument.

b. *Visual Signals.* None—unless prescribed in national or local instructions.

4. *Friendly Nuclear Strikes* (note 2).

a. *Sound Signals.* As prescribed in national or local instructions.

b. *Visual Signals.* As prescribed in national or local instructions.

5. *Signals for the All Clear* (note 2).

Release from an Alarm State should normally be given orally, but when circumstances permit, the following sound signals may be used: A continuous sustained blast on vehicle horn, whistle, bugle or other wind instrument or a siren signal with a continuous steady pitched blast, one minute in duration.

Notes:

1. If an air or ground attack is determined to be a nuclear, biological or chemical hazard, the appropriate NBC hazard alarm should replace or immediately follow the air or ground attack alarm as appropriate.

2. The spoken word (vocal alarm) remains the most effective means of informing troops in an emergency.

APPENDIX D

FIELD ARTILLERY AIRMOBILE OPERATIONS

Section I. AIRMOBILE MOVEMENTS

D-1. GENERAL

a. Field artillery movements in which helicopters are used as the primary means of mobility are conducted as tactical moves and may be executed during daylight or darkness. Air movement of field artillery units is applicable in all types of operations and is used to—

(1) Rapidly launch field artillery units into battle in support of the maneuver force.

(2) Air movement to bypass enemy or natural obstacles.

(3) Facilitate rapid displacement.

(4) Bypass enemy concentrations.

(5) Position field artillery units to facilitate future operations.

b. The air movement is characterized by detailed planning and coordination, aggressive execution, speed of displacement, and operation with minimum personnel and equipment for periods of short duration.

c. The air movement is conducted in four phases—*planning*, *marshaling*, *movement*, and *occupation of position*. The *planning* phase encompasses coordination with supported and supporting units, reconnaissance and selection of positions, preparation and issuance of orders, and, time permitting, rehearsals. The *marshaling* phase consists of ground movement to appropriate areas; preparation of the helicopter loading area; preparation of troops, equipment, and supplies for airmobile operations; and loading of helicopters preparatory to actual movement. The *movement* phase consists of the actual move by helicopters from the loading area to the landing site. This phase begins with the takeoff of the first helicopter and ends with the arrival of the last helicopter load at the landing site. The *occupation of position* phase consists of the unloading of personnel and equipment, organization of the landing site, and occupation of position.

D-2. Organization for Movement

a. Organization of the field artillery unit for

the air movement is an integral part of the planning phase.

b. A field artillery unit which is to participate in an airmobile operation may be organized into three echelons.

(1) *Assault echelon*. Composition of the assault echelon varies with the assigned mission, aircraft available, and duration of the operation. Generally, the assault echelon consists of the elements of the battery that are essential to the control and/or delivery of immediate support from the objective area. Because of lack of ground mobility and survey capability of the field artillery battery, survey control must be coordinated with the supported unit.

(2) *Resupply, or followup, echelon*. The resupply or followup echelon consists of the combat support personnel, supplies, and equipment necessary to sustain the assault echelon until linking occurs. Normally, the followup supplies and equipment are transported by air until ground linkup and secure routes of supply are established. If the airlift of necessary supplies and equipment is curtailed by priority of other missions or by inclement weather, surface transportations must be used.

(3) *Rear echelon*. The rear echelon includes all personnel, supplies, and equipment not included in the assault and resupply echelons. The rear echelon supports the assault, and resupply echelons by providing administrative, mess, maintenance and supply support in the base area.

c. The success or failure of a given operation may depend on the composition of all three echelons of the airmobile field artillery unit. Therefore, due importance should be attached to the selection of troops and equipment for the echelons, and responsibilities should be assigned to the most essential personnel consistent with requirements imposed by the assigned mission.

D-3. Planning

a. The planning phase of the movement varies in length and detail, depending on the urgency of the situation, and is materially enhanced by the development of standing operating procedures. The planning phase of the movement begins immediately upon receipt of the warning order and continues through the beginning of the movement phase. Major considerations involved in planning are command and coordination; organization of the unit consistent with the mission; reconnaissance and selection of ground and air routes, loading areas, landing sites, and position area(s); preparation of helicopter loading and movement plans based on organization of the unit; rehearsals of helicopter loading and unloading; resupply requirements; and preparation and issuance of the unit operation order.

b. Coordination and liaison relative to the air movement should be conducted on a continuing and aggressive basis throughout all phases of the movement. A liaison team or a liaison officer from the supporting helicopter unit should be provided to the field artillery unit to assist in the technical aspects of planning and executing the air movement and to supervise rehearsals, preparation and distribution of equipment in the loading area(s), loading and unloading, and signaling relative to the air movement. Continuous liaison must be maintained between the field artillery battery and the helicopter liaison team or liaison officer in all phases of the movement.

c. To expedite and simplify air movement planning, units must prepare loading plans, which serve as a basis for the determination of aircraft requirements to lift specific units. Loading plans should be developed in detail at section, platoon, and battery levels. The loading plans should include planning worksheets that show, by type, how many aircraft are required to lift a given unit, or an element of a unit, based on the type of aircraft available, the combat radius of the mission, and the environmental conditions.

D-4. Reconnaissance by Airmobile Units

a. In airmobile operations, a physical reconnaissance should be conducted, if possible, during the planning phase. Frequently, however, this type of reconnaissance may be prohibited during planning due to the weather, unavailability of aircraft, security factors, or a requirement to maintain surprise. The field artillery

commander must be prepared to move his unit, with only limited information available. Physical reconnaissance by air, when feasible, is conducted in accordance with established principles. It may be necessary for the battery commander to perform this reconnaissance as he moves forward with elements of the assault force.

b. Since ground vehicles used in reconnaissance, selection, and occupation of position must be airlifted, the number of vehicles will be limited. Therefore, the ground mobility of the various elements of the battery in the forward area will be limited accordingly.

c. The process of reconnoitering for and selecting positions is accelerated in airmobile operations because of the mobility of the aircraft and the resultant flexibility.

D-5. Composition of Reconnaissance Party

a. The composition of the reconnaissance party varies with the mission, the availability of aircraft, and the conditions imposed by the tactical situation. The party should include sufficient personnel to initiate observation, communication, and survey and to guide the battery into position.

b. In a rapid reconnaissance, selection, and occupation of position, the battery commander's party is composed of the complete assault echelon, which will normally include the firing battery. In a deliberate reconnaissance, selection, and occupation of position, the battery commander's party may be divided into two elements—the reconnaissance party and the remainder of the assault echelon.

c. A deliberate reconnaissance is more desirable than a rapid reconnaissance. It permits detailed study of the area and careful planning for the movement to, and occupation of, the position prior to the displacement of the remainder of the assault echelon.

d. The light observation helicopter, since it permits all-round visibility, greatly assists reconnaissance from the air, thereby substantially reducing the overall time needed for reconnaissance.

D-6. Positions

a. In airmobile operations, elements of the field artillery units are moved from a loading area to a landing site. Since the ground mobility of the assault echelon is limited, the landing site should coincide with the firing battery position area or should be adjacent to it. When this is not possible, routes must be selected to permit

movement of the pieces, either by hand or by organic vehicles, from the landing site to the firing battery position area.

b. The firing positions selected for the field artillery in airmobile operations must provide a 6,400 mil firing capability.

c. One of the major advantages inherent in airmobile operations is the capability of the field artillery to occupy and fire from positions that are inaccessible by other means of transport. The positions of individual pieces must be carefully selected, particularly in rough terrain that impedes the ground movement of the pieces. Because of the rapidity of airmobile operations, radar survey procedures should be considered for the firing battery (~~FM 6-100~~ and FM 6-161). The selection of positions may re-

quire joint reconnaissance by and agreement between, the battery commander and the helicopter liaison officer.

D-7. Liaison

a. Liaison between the field artillery commander and the helicopter liaison officer is as important during the reconnaissance and selection of position as during the movement of the unit.

b. The helicopter liaison officer assists in the technical aspects of planning and executing the movement. Sortie requirement, load configurations, and distribution of equipment for movement should be agreeable to both the field artillery commander and the helicopter liaison officer.

Section II. PLANNING FIELD ARTILLERY FIRES FOR AIRMOBILE OPERATIONS

D-8. General

a. The primary objectives of fire planning for an airmobile operation are—

(1) Insuring timely and effective fire support in the early stages of the airmobile operation.

(2) Attaining and maintaining flexibility of fire support.

(3) Providing of safety and coordination measures throughout all phases of the operation.

b. Defensive fires are inherent in field artillery fire planning. Assault and defense plans are prepared concurrently.

c. Except as noted in chapter 8, techniques and procedures for fire planning, fire direction, and fire support coordination are the same as those established in current doctrine (FM 6-20 and FM 6-40).

D-9. Fires in Airmobile Offensive Operations

a. *General.* Since an airmobile operation is an offensive operation, the procedures for planning fires generally are established in current doctrine for offensive combat. However, certain important considerations are particularly pertinent to airmobile operations. For example, the following three conditions can govern the amount of fire support available to the airmobile force and, consequently, the volume and density of the fires to be planned:

(1) *The objective (planned location of airhead) is beyond supporting range of most field artillery.* When the objective is beyond supporting range of most field artillery, the only fires

that will be planned for artillery outside the objective area are those of medium- or long-range missiles. Since these weapons are used only against highly remunerative targets, which will be limited, and since troop safety may preclude their use, it is doubtful that extensive fires will be planned for these weapons. Thus, virtually all the fires in support of the objective will be planned for the artillery with the airmobile force.

(2) *The objective is beyond supporting range of all cannon field artillery.* When the objective is beyond supporting range of all cannon field artillery, fires will be planned for rockets and missiles that are within supporting range. Since targets suitable for these weapons will be limited, the bulk of the fires in support of the objective will be planned for the field artillery with the airmobile force.

(3) *The objective is within supporting range of division and corps cannon field artillery.* When the objective is within supporting range of division and corps cannon field artillery, a great volume of supporting fires may be planned. The bulk of the fires will be planned for artillery outside the objective area. This situation demands a completely coordinated fire plan, which should be finalized at the highest field artillery echelon involved.

b. *Planning Fires for the Field Artillery with the Airmobile Force.*

(1) The basis of fire planning for an airmobile operation is the ground tactical plan of the supported unit(s).

(2) When the objective is deep, less target

information will be available; therefore, for the initial phase of the airmobile operation, fires usually will be planned against suspect locations rather than known locations.

(3) All target acquisition means must be exploited to the utmost. Attack of long-range and medium-range objectives will depend largely on reconnaissance by means of aerial or airborne equipment. For reasons of security, physical reconnaissance of the objective area rarely will be permitted. In many instances, reconnaissance will be conducted from maps and aerial photographs.

(4) ~~Appendixes (field artillery, air defense, air, nuclear, CBR, and naval gunfire) are appended to the fire support plan annex to the operation order, as in any other type of operation.~~

(4) ~~The~~ The bulk, if not all, of the fires planned for defense of the objective area will be on-call fires.

D-10. Fire Support Coordination

a. Fire Support Coordinator. Generally, the airmobile force will be organized into a task force. The senior field artillery officer with the task force normally is the fire support coordinator (FSCOORD).

b. Responsibilities.

(1) The FSCOORD with the main force coordinates all supporting fires on surface targets throughout the operation.

(2) The FSCOORD with the airmobile force coordinates all fire support delivered on surface targets when the objective is beyond supporting range of cannon artillery.

(3) When linkup between the airmobile force and another major element of the main force is planned, a fire coordination line (FCL) is established between the forces involved. The FCL is established by the headquarters controlling both forces. It is used to insure that neither force fires on elements of the other force. The fire coordination line must be established on readily identifiable terrain features, and its location must be known in the FSCC and the

FDC of each force throughout all phases of the operation. Neither force can fire beyond the FCL without obtaining prior clearance from the other force.

c. Flak Suppression. Flak suppression fires are essential to the success of an airmobile operation. In an airmobile operation, the fires of all available field artillery within range are utilized against known and suspect hostile air defense artillery (ADA) locations. When the objective is beyond range of the cannon field artillery supporting the main force, other fire support means must be provided for flak suppression. In all cases, careful coordination with flight movements is essential.

d. Safety Measures. Safety measures assume particular importance in airmobile operations. Flight corridors and alternate routes must be designated, and safety requirements must be established. The flight operations center coordinates with the fire support coordination agencies on the use of air corridors to permit planning fires which will not violate safety requirements.

e. Air Defense.

(1) Successful execution of airmobile operations requires attainment of air superiority en route to and over the loading and objective areas.

(2) Loading areas and departure airfields are defended by theater air defense forces. If Army air defense units must be displaced to provide this defense, these units should be among the first to arrive in the loading areas.

(3) En route, air defense is provided by the Air Force and by the fires of any Army air defense artillery available along the route. Air movement plans are coordinated with the appropriate air defense commander when air movements are to take place within range of friendly air defense artillery.

(4) In major operations, air defense of airborne or airmobile troops landed in the objective area is provided by attached air defense artillery units and by the Air Force. Air defense artillery must be airlanded in the objective area as soon as suitable sites have been seized.

APPENDIX E

A TYPE STANDING OPERATING PROCEDURE FOR THE FIELD ARTILLERY BATTALION, 105-MM, TOWED, INFANTRY DIVISION

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ANNEX I. Artillery Counterfire Information Form (omitted).	
II. Loading Plan for HQ, HQ & Svc Btry (omitted).	
III. Loading Plan for 105-mm Firing Btry (omitted).	
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X. Loading Plan for Rail Movement (omitted).	
XI. Type Loads, Airmobile Operations (omitted).	

Section I. GENERAL

E-1. Reference and Rescission

- a. Reference. Artillery annex, SOP, _____
 Inf Div. _____
 (date)

- b. Rescission. All standing operating proce-

dures previously published by this headquarters are rescinded.

E-2. Purpose

This SOP standardizes routine procedures; it applies to organic and attached units alike unless otherwise stated.

Section II. PERSONNEL

E-3. Discipline, Law, and Order

Special and summary courts-martial.

- a. Organic units hold accused.
 b. Attached units hold accused; however, any action concerning special or summary courts-martial will be referred to parent organization.

E-4. Prisoners of War

a. S2 will conduct brief tactical-level interrogation of selected prisoners of war (PW), civilian internees, and detainees, and coordinate evacuation of these individuals (under guard) to brigade or division collecting point.

b. Wounded PW, civilian internees, and detainees, will be evacuated under guard through medical channels.

c. Detailed accountability will be stressed at all levels.

E-5. Recovery and Disposition

a. Dead will be evacuated to division collecting point.

b. Isolated burials will be permitted only when unavoidable. Locations of isolated graves will be reported to battalion executive officer upon interment or discovery.

c. Personal effects will be inventoried and attached to the remains at the initial collecting point and will not be removed until the remains arrive at the Army collection facility.

d. Civilian dead will be turned over to local authorities. Identification report will be submitted to division G1 through battalion S1.

E-6. Morale and Personnel Services

a. *Decorations and Awards.* Recommendations will be submitted to battalion executive officer at any time for action considered worthy.

b. *Personnel Services.*

(1) Administrative section will deliver mail to units.

(2) PX items will be distributed with rations.

(3) Rest and recreation quotas will be filled when combat conditions permit.

(4) Emergency leaves will be processed through battalion S1 and division AG, after emergency is verified by Red Cross.

E-7. Personnel Procedures

Recommendations for battlefield commissions will be sent through parent organization.

E-8. Reports

Daily reports cover period from 1800 hours to 1800 hours. Reports will be submitted to battalion by 1900 hours and by battalion to division artillery by 2000 hours.

Section III. INTELLIGENCE

E-9. Observation

a. Responsibilities.

(1) *Direct support.* Coverage of zone of action of supported unit.

(2) *Reinforcing.* As requested by reinforced unit.

(3) *General support.* As directed.

(4) *General support-reinforcing.* Coverage of the zone of the force as directed by higher headquarters or as requested by reinforced unit when approved by higher headquarters.

b. Artillery Observation Posts (OP).

(1) *Functions.* Adjust artillery fire, observe fires, and report battlefield information. Advise supported unit commander on field artillery matters.

(2) *Communication.* Lay wire to fire support (liaison) officer's switchboard and supported company, when appropriate (assisted by liaison section and battalion wire section as required). Maintain communication with supported unit, liaison officer, and battalion fire direction center. (Performs checks as required.)

(3) Locations.

(a) Forward observers select their positions to best accomplish their missions with the supported companies.

(b) Battalion OP are established as directed by S2.

c. S2 Staff Responsibilities.

(1) Establish artillery OP's as necessary.

(2) Brief observers and liaison officers before departure from own unit to include—

(a) Enemy situation and targets previously located.

(b) Supply of maps, and photos, and survey control.

(c) Safeguarding of classified material, EEI, and countersign.

(d) Assignment of zones of observation and primary areas of responsibility within each zone.

(3) Supervise own observers and coordinate their activities with those of supported unit.

(4) Maneuver own observation agencies.

(5) Request and coordinate requests for additional observation agencies (air observation, radar, sound and flash, etc.).

(6) Coordinate shell report and crater analysis teams.

d. Fire Support (Liaison) Officer's Responsibilities.

(1) Liaison (fire support) officers with supported battalions or task forces—

(a) Brief the forward observers before they join the supported companies.

(b) Supervise and coordinate the activities of the FO's.

(c) Review and forward to the battalion FDC the target lists, the visibility diagrams, and other observer intelligence information.

(d) Relay to battalion S2 any information obtained through supported unit collection agencies.

(e) Notify FDC of locations of friendly frontline elements and patrols that would influence location of no-fire line.

(f) Serve as fire support coordinator for supported battalion (task force).

(2) Fire Support (Liaison) officer with supported brigade—

(a) Performs duties in (1)(d) and (e) above.

(b) Assists in coordinating artillery intelligence agencies with those of supported unit.

(c) Forwards targets and calls for fire developed at supported brigade to battalion FDC.

(d) Serves as an assistant fire support coordinator.

(e) Prepares brigade's fire support plan.

e. Forward Observer Procedures.

(1) Reports to S2, S3, and communications officer for briefing prior to departure.

(2) Removes all security material from personnel and vehicles prior to departing battalion area.

(3) Reports to fire support officer (LO) at supported unit headquarters.

(4) Establishes OP to cover required zone of observation.

(5) Establishes communication and report location of OP.

(6) Prepares terrain sketch.

(7) Submits visibility diagram through LO to S2 when called for.

(8) Organizes personnel for continuous operation. Prepare for night operation.

(9) Selects alternate OP and report its location.

(10) Submits—

(a) Information reports to S2 or as directed.

(b) Shelling reports to S2 or as directed.

(c) Periodic reports hourly to S2 or as directed. (Negative reports required.)

f. Air Observation.

(1) Requests for aerial observers are sub-

mitted to division artillery S2 (to supplement ground observation).

(2) Disposition and employment of aerial observers (augmentation) as directed by division artillery.

g. *Radar.* Battalion radar section will be employed under the supervision of the battalion S2. *(when applicable)*

h. *Shelling Reports.*

(1) *Form.* See annex A (DA Form 2185-R) (omitted).

(2) *Procedure.* From locating agency to battalion S2 to division artillery by fastest means available.

(3) *Shelling report teams.*

(a) FO sections.

(b) Liaison sections.

(c) Survey sections.

(d) Two 2-man teams per battery.

E-10. Air Defense Warning System

a. *Procedure.* Warnings received over all available communications systems.

b. *Air Defense Warning.*

(1) *Red*—Attack by hostile aircraft or missiles is imminent or in progress.

(2) *Yellow*—Attack by hostile aircraft or missiles is probable.

(3) *White*—Attack by hostile aircraft or missiles is not considered immediately probable or imminent.

c. *S2 Responsibilities.*

(1) Determine air defense warning status.

(2) Rebroadcast warning.

E-11. Reports

a. S2 submits periodic report to division artillery S2 or as directed.

b. S2 submits daily intelligence summary to division artillery S2.

c. S2 submits necessary intelligence data for unit and command reports to battalion executive officer.

Section IV. OPERATIONS

E-12. Tactical Missions

See annex IV.

E-13. Fire Direction

a. *Firing Charts.*

(1) HCO chart and VCO chart.

(2) Chart at battery.

(3) Coordinates and altitudes of registration point for grid sheet observed firing chart are 3000060000 and 300 meters, respectively.

(4) Battalion and battery fire direction personnel exchange information necessary to keep firing charts current and complete.

b. *Fire Capabilities.* S3 to division artillery. Report initial grid and direction of fire for each battery.

c. *No-Fire Line* S3 will submit recommendations to the battalion commander. The battalion commander will present his recommendations to the brigade commander. When approved, the location of the no-fire line is submitted to division artillery and to higher and lower maneuver and fire support echelons. The no-fire line will be kept current on all firing charts. Battalion S3 will keep batteries informed on all restrictions on fire. This includes, but is not restricted to the following:

(1) Accurate locations of forward friendly troops as reported by observers and liaison officers.

(2) Plan of maneuver.

(3) Patrol activity.

(4) Friendly air activity.

d. *Control of Fire Direction.*

(1) *Calls for fire.* Calls for fire are normally sent to battalion FDC. Control is centralized at battalion. Control may be decentralized to a designated battery, as required.

(2) *Range spread.*

(a) *With adjustment.* The adjusting battery will fire center range.

1. If Alfa adjusts, Bravo will fire beyond center range and Charlie will fire short of center range.

2. If Bravo adjusts, Alfa will fire beyond center range and Charlie will fire short of center range.

3. If Charlie adjusts, Alfa will fire beyond center range and Bravo will fire short of center range.

(b) *Without adjustment.* Alfa will fire beyond center range, Bravo will fire center range, and Charlie will fire short of center range.

e. *Artillery Fire Plans.* Battalion will effect coordination with the heavy mortar platoons of the supported maneuver battalion, when appropriate.

f. *Target Numbering System.* See annex V (omitted) (FM 6-20).

g. Artillery Final Protective Fires (FPF).

(1) *Direct support.* The battalion can provide three 105-mm FPF to the supported unit.

(2) *Reinforcing.* As requested by reinforced unit.

(3) *General support.* As directed by higher headquarters.

(4) *General support-reinforcing.* As requested by reinforced unit and approved by higher headquarters or as directed by higher headquarters.

h. Additional Massed Fire Procedures.

(1) Code name is announced periodically by corps artillery.

(2) S3 calls for additional fire from division artillery and furnishes grid, altitude, and nature of target.

(3) Division artillery rebroadcasts. All available division artillery will fire.

(4) Request is transmitted to corps artillery; corps artillery rebroadcasts. All available corps artillery will fire.

i. Maximum and Sustained Rates of Fire. (FM 6-40)

j. Fire Support Coordination. See appendix 4, field artillery annex, SOP, _____ Inf Div.

k. Observer and Liaison Officer Briefings. S3 briefs observers and liaison officers on friendly situation, weapons available, status of ammunition, registration points, and location of the supported unit.

E-14. Survey

a. Procedures and Specifications. The survey will be performed to fifth-order accuracy (1:1,000). FM 6-2, Field Artillery Survey, will be used as a guide.

b. Survey Control.

(1) A battalion survey control point (BnSCP) with azimuth mark and height will be provided within 2,000 meters of the battalion position area by division artillery.

(2) The battalion survey will be started with assumed data if a BnSCP has not been established by division artillery. The battalion survey control will be converted to the division artillery control as soon as possible.

(3) Survey control will be provided for the target area (for registration), the counter-mortar radar, and the heavy mortar platoons of the supported maneuver battalions, as required.

c. Alternate Positions. Alternate positions will be surveyed as time becomes available.

d. Coordination. All surveys will be coordinated with the division artillery and reinforcing battalion survey officers.

e. Priority. The order of priority for survey is position area (to include radar), target area, connection survey, heavy mortar platoons, and alternate position areas.

E-15. Marches

a. Quartering Parties.

(1) Report to vicinity of message center.

(2) Vehicles—one $\frac{5}{4}$ -ton vehicle for each battery.

(3) Personnel—one officer, one NCO, and two enlisted men (including driver).

b. Movement Order. The movement order prepared by the S3 will include—

(1) Start point (SP) and start point line.

(2) Order of march.

(3) Rate of march.

(4) March units.

(5) March unit commanders.

(6) March distances.

(7) Route.

(8) Halts.

(9) Route markers.

(10) Release point (RP) and release point time.

(11) Communications.

(12) Pertinent restrictions, if any.

c. March Discipline.

(1) Only $\frac{1}{4}$ -ton vehicles are permitted to double column.

(2) Each battery will designate a pacesetter vehicle.

(3) Radio communication is maintained between head and tail vehicles in each march unit and between each march unit and battalion commander.

(4) During halts, road guards will be posted at head and tail of column to signal oncoming traffic.

d. Halts.

(1) *Scheduled.* All personnel, except drivers and assistant drivers, will dismount and disperse. Drivers and assistant drivers will perform vehicle inspection and service.

(2) *Nonscheduled.* Senior person in column proceeds forward, determines cause for the halt, and takes appropriate action to continue the march. All personnel will dismount and disperse. At night, assistant drivers go forward to the vehicle in front of their own.

e. Maintenance. Each driver and assistant driver inspects and services vehicle at all authorized halts.

f. Vehicle Breakdown.

(1) Personnel dismount and direct traffic around stalled vehicle.

(2) All vehicles pass except march maintenance vehicle.

(3) March unit maintenance personnel start repair of vehicle pending arrival of battalion maintenance personnel.

(4) Further action will be directed by battalion motor officer.

(5) Vehicle will regain place in column only after column halts.

E-16. Transportation

a. Surface Movement.

(1) Rail.

(a) Rail movement will be conducted in accordance with the procedures outlined in FM 55-15, Transportation Corps Reference Data.

(b) See annex I for loading plan for rail movement. Additions to loading plan will be formulated, using data in FM 55-15.

(2) Water.

(a) Water movement will be conducted in accordance with the SOP published by the loading terminal.

(b) Vessel characteristics used for planning purposes are outlined in FM 55-15.

b. Air Movement.

(1) Airmobile operations.

(a) Tactical airmobile operations will be conducted in accordance with the principles outlined in FM 57-35, Airmobile Operations.

(b) Type loads are outlined in annex J.

(2) Airborne operations.

(a) Transport planning will be based on procedures outlined in TM 55-450-15, Air Movement of Troops and Equipment.

(b) Type loads will be based on Air Force landing data and aircraft characteristics.

E-17. Reconnaissance, Selection, and Occupation of Position

a. Reconnaissance Parties. Standard:

<i>Hq staff</i>	<i>Hq & svc btry</i>	<i>Firing btry, ea</i>
CO and S8 ¼-ton.	BC ¼-ton.	BC ¼-ton.
COMMO ¼-ton.	Wire team 1 ¾-ton.	Asst XO ¾-ton.
RO ¼-ton.	Survey team 1 ¾-ton.	Wireman ¾-ton.
S2/radar off ¼-ton.	FDC ¾-ton.	

(1) These reconnaissance parties will require crew-served weapons and crews. The number of weapons and the strength of the crews will depend on the situation.

(2) In loading plans of this SOP, the crew-

served weapons in the sections are listed as shown in the TOE.

(3) A recommended solution for the distribution of crew-served weapons for the vehicles listed under each battery is as follows:

<i>Machinegun</i>	<i>Launcher 3.5-in.</i>	<i>Launcher, 40-mm</i>
<i>Hq, hq & svc btry</i>		
Bn survey team No. 1	Bn survey team No. 1	As shown in TOE
Bn wire team No. 1		
<i>Firing Btry</i>		
Btry mess	Btry mess	As shown in TOE
Btry maint	Btry wire team	
Btry wire team	Btry asst XO	
Btry XO	How sec No. 2, 4 & 6	
How sec No. 1, 3 & 5	Ammo sec No. 2	
Ammo sec No. 1		

b. Procedures.

(1) Vehicles, when limited to less than number shown in *a* above, will be eliminated from the bottom of the list. However, when a one-vehicle firing battery party is ordered, only the assistant executive officer's vehicle will be taken on the reconnaissance.

(2) Vehicles will be assembled in vicinity of message center unless otherwise directed.

c. Occupation of Position.

(1) *Laying*. Pieces are laid with tubes within 10 mils of center of traverse.

(2) *Boresighting*. Boresighting will be accomplished immediately upon occupying position and once daily in static position. Test target or distant aiming point method will be used, in that priority. Standard angle method may be used periodically to verify boresight.

(3) *Ammunition*. Unless otherwise specified, the following ammunition will be with each piece:

105-mm
45 rd HE
5 rd HEP-T
5 rd WP
5 rd colored smoke
Total.... 60 rd (illumination rounds as required)

(4) *Executive officer's reports*. The executive officer reports when the battery is laid and makes other reports when time permits. Details of these reports are shown in paragraph 4-47, FM 6-40.

(5) *After registration*. The adjusted azimuth and/or orienting angle is measured and reported to battalion S3.

d. Organization of Position.

(1) *Priorities.*

(a) Preparation to deliver fires to include establishing communications and initial security posts.

(b) Protection of personnel. *Defense*

(c) Preparation of ~~security~~ installations and camouflage of pieces, vehicles, etc. Camouflage is prepared concurrent with other work.

(d) Protection of ammunition.

(e) Preparation of emplacements for howitzers and section equipment.

(f) Preparation of direct fire positions.

(g) Preparation of protective minefields and barbed wire (when authorized).

(h) Preparation of alternate positions.

(2) *Alternate positions.* Locations are selected and reported by BC at earliest opportunity. Positions are organized as completely as time permits to include survey, wire communication, and emplacements for howitzers, personnel, and equipment.

(3) *Dummy positions.* Dummy positions are established only on authority of higher headquarters.

(4) *Defense.* Battery ~~executive officer~~ *first sergeant* reports completion of organization of battery defense and, upon approval of battery commander, submits a sketch of the battery defense to battalion executive officer (para 6-18, FM 6-140). *(FM 6-50)*

e. Displacement. When the battalion displaces by echelon, the first echelon of the headquarters, headquarters and service battery displaces with the first firing battery; the second echelon displaces with the remaining firing batteries. The battalion commander will control the first echelon during the move, and the battalion executive officer will control the second echelon.

(1) *First echelon.*

(a) Battalion commander.

(b) Communication officer.

(c) S2.

(d) Reconnaissance and survey officer.

(e) Survey section.

(f) S3.

(g) FDC (shop van).

(h) Headquarters and service battery commander.

(i) Wire teams 2 and 3.

(j) Message center.

(k) Radio section 1.

(l) Radio mechanic.

(m) One Redeye team.

(2) *Second echelon.* All remaining.**E-18. Security***a. Organization of Personnel.*

(1) Battalion executive officer is designated battalion local security officer.

(2) Each battery will designate an officer as battery local security officer.

(3) Security force for each battery will be composed of 12 EM, 1 off, and 1 NCO, with weapons and ammunition as follows:

(a) 10 Rifles, semiautomatic, each with three bandoleers of ammunition.

(b) 2 Rifles, fully automatic, each with 12 magazines of ammunition.

(c) 2 Launchers, grenade, 40-mm, M79, each with twelve 40-mm grenades (plus .45 cal pistol with three magazines of ammunition).

b. Security Procedures.

(1) *Coordination.* Preliminary coordination is accomplished between adjacent units pending final coordination by battalion local security officer.

(2) *Signals.* Appendix C, FM 6-140.

(3) *Outpost reports.*

(a) *Day*—hourly (negative report required).

(b) *Night*—every 15 minutes (negative report required).

(4) *Release from primary mission.* Authority to cease primary mission to defend position against attack is delegated to senior person present. Immediate report of such action is made to battalion.

(5) *Local counterattacks.* Local counterattacks are limited to action necessary to restore position and continue mission.

(6) *Displacement.* Displacement to alternate positions is made only on authority of battalion or on authority of senior person present if communication is lost.

(7) *Primary weapons.* Primary zone of responsibility is assigned each cannon. If a cannon is directed to fire outside zone, responsibility for observation in assigned zone remains. Range cards are prepared by each section.

(8) *Report of defensive plan.* Sketches of primary and alternate positions drawn to scale of 1:5,000, are given to battalion local security officer. The sketches show locations of primary and auxiliary weapons, zone of fire for each weapon, and locations of sentinels, outposts, and direct fire positions.

(9) *Destruction of material.* Material that must be abandoned will be destroyed, when authorized by the commander.

(10) *CB defense.* See annex VI.

(11) *Nuclear and Radiological Defense*. See annex VII.

c. Security on the March.

(1) Air and ground sentinels will be posted on all vehicles.

(2) All sentinels will have assigned sectors to observe during march.

(3) All automatic weapons will be manned.

(4) Vehicles will not stop when under attack but will return intensified fire while moving at convoy speed or accelerated speed or will deploy as directed by serial commander.

(5) Disabled vehicles will be bypassed. All personnel, weapons, and ammunition will be immediately removed from disabled vehicles and will be *rapidly* picked up by other vehicles in the convoy.

(6) Destruction of disabled vehicles, weapons, or ammunition will be undertaken only with approval of the serial commander.

(7) Serial commander will have antitank and automatic weapons at head of serial for use

in clearing roadblocks. Redeye teams will be placed throughout the column with emphasis on the front and rear.

E-19. Aviation

a. Air OP. Aircraft will be available on call from division artillery aviation section.

b. Airfields. Marking of airfields in accordance with procedures established by higher headquarters, is the responsibility of the communication officer.

c. Heliport.

(1) The heliport will be established in the vicinity of battalion message center.

(2) Marking of the heliport, in accordance with procedures established by higher headquarters, is the responsibility of the communication officer.

E-20. Reports

S3 will submit data for unit and command reports to battalion executive officer.

Section V. LOGISTICS

E-21. Class I Supplies

a. Battalion supply section will deliver rations daily.

b. Each battery draws water from water supply point (WSP). S4 informs batteries of locations of WSP. All water, except that drawn from WSP, is considered to be contaminated.

c. Three days' supply of emergency rations will be held in reserve in each battery. Battery commanders have authority to issue.

d. Additional emergency rations are carried in following vehicles:

(1) FO vehicle—3 rations.

(2) CO vehicle—1 ration.

(3) Ammo vehicle—1 ration.

E-22. Class II Supplies

a. Loss of or damage to major items will be reported immediately to S4.

b. Routine supply is based on normal requirements.

E-23. Class III Supplies

Delivered to battery positions.

E-24. Class V Supplies

a. Battery and battalion ammunition vehicles will replenish loads at ASP under supervision of ammunition trains commander.

b. The basic load for field artillery battalion, 105-mm, towed, infantry division, is 200 rounds per weapon distributed as follows:

(1) Each prime mover	60 (6 ea)
(2) Btry ammo trk and tlr, No. 1	150 (1 ea)
Each other btry ammo trk and tlr	148 (3 ea)
(3) Total in each firing btry	954 (3 ea)
(4) Bn ammo trk and tlr, No. 1	146 (1 ea)
(5) Each other bn ammo trk and tlr	148 (4 ea)
(6) Total in hq, hq & svc btry	738
(7) Basic load for battalion	3,600 rounds

E-25. Class VII Supplies

a. These supplies are major end items.

b. Battalion S4 requisitions and draws the item, and issues it to the requesting battery.

E-26. Class VIII Supplies

a. The battalion medical section requisitions medical supplies and repair parts.

b. Supplies are delivered to the battalion aid station.

E-27. Class IX Supplies

a. These supplies are repair parts (less medical).

b. Repair parts may be picked up by the requesting unit at the technical supply activity of the supporting direct support maintenance unit, or may be delivered direct to the unit.

E-28. Class X Supplies

- a. These are supplies not included in classes I through IX.
- b. These supplies are used for civic action projects.

E-29. Salvage

Each battery will collect surplus, salvage, and enemy materiel and will establish dump in a convenient location. Salvage is evacuated by battalion S4 through normal supply channels.

E-30. Evacuation and Hospitalization

- a. One aidman from battalion medical section is attached to each cannon battery.
- b. Aid station is established in vicinity of battalion CP.
- c. Wounded or sick personnel are evacuated by battery to battalion aid station; further evacuation to division clearing station will be by battalion medical section.
- d. Wounded or sick FO and liaison personnel are evacuated through channels of the supported unit.

E-31. Sanitation

See Annex — (Medical) to SOP, — Inf Div.

E-32. Reports

- a. S4 collects information and submits equipment status report as directed by division artillery S4.
- b. S4 submits data to battalion executive officer for unit and command reports.

E-33. Maintenance

a. *Direct Responsibility.* Direct responsibility for maintenance is placed on the individuals to whom equipment is entrusted for their personal use or for the use of their subordinates. Direct responsibility may be either personal or super-

visory. Users of each item of equipment should consult the appropriate technical manual for required maintenance.

- b. *Howitzer.*

(1) Systematic maintenance and inspections are essential to insure that—

(a) The cannon section is prepared to carry out its mission immediately.

(b) Unexpected breakdowns are not experienced at a critical time when maximum performance is essential.

(c) Expensive and time-consuming repairs are reduced to a minimum.

(2) Authorized adjustments and disassembly to be performed by battery personnel are prescribed in technical manuals. Deviation from these procedures is not authorized, except as permitted by the responsible direct support maintenance officer.

c. *Motor Maintenance.* Preventive maintenance is the keystone of efficient motor maintenance. Preventive maintenance services, procedures and records are discussed in the technical manual for each vehicle.

- d. *Signal Maintenance.*

(1) Operator maintenance will be performed daily; entries will be made on the appropriate equipment inspection and maintenance worksheet.

(2) Organizational maintenance services will be completed as required in the appropriate equipment technical manual.

(3) Records of inspections and services will be maintained as required in TM 38-750.

- e. *Signal Repair.*

(1) Items in need of organizational maintenance will receive operator maintenance and will be tagged with required information before being sent to battalion.

(2) If possible, items will be repaired at battalion. If direct support or field maintenance is indicated, unit will prepare and process the necessary maintenance requests.

Section VI. COMMAND AND COMMUNICATION

E-34. Command Post

- a. *Location.* S3 reports movement and location to division artillery.
- b. *Selection of Locations for Installations.*

(1) Headquarters battery commander; aided by the communication officer (coordinating with S3), selects locations for headquarters, FDC, message center, switchboard, and radio panel station.

(2) Headquarters battery commander selects all other locations.

E-35. Wire Communications

- a. *Wire System (Bn).* See annex G.

- b. *Wire System (105-mm Btry).* See annex G.

- c. *Line Route Map.* Line route map is a 1:50,000 overlay. Batteries submit one copy to battalion; communication officer submits con-

solidated battalion copy to division artillery. Changes to line route map are submitted in the same manner.

d. Priority of Circuits Installed by Headquarters, Headquarters Battery.

(1) Fire control/fire direction—includes FDC to liaison officers to supported unit, liaison officers to artillery FO's, and local fire direction lines.

(2) Command—includes CO, message center, outposts, C-E Off, radar and others as directed.

(3) Administrative.

(4) Alternate routing through area communications center.

e. Priority of Circuits Installed by Firing Batteries.

(1) Fire control/fire direction—includes Btry FDC to Bn FDC, fire direction local from FDC to executive officer's post, executive officer to howitzer crew and aiming circle.

(2) Command—includes btry switchboard to bn switchboard, BC, message center, outposts and others as directed.

(3) Administrative.

(4) Trunk circuits to adjacent units as directed.

f. Special Requirements—Reinforcing Mission. Circuits are installed by battalion or designated firing battery.

(1) Trunk circuit from battalion FDC to reinforced unit FDC.

(2) Trunk circuit from command switchboard to reinforced command switchboard.

(3) Other circuits as directed by reinforced battalion.

E-36. Radio Communication

a. Radio Net (Bn). See annex H.

b. Radio Net (105-mm Btry). See annex H.

c. Explanation of Nets.

(1) *Battalion command net, FM*
Short title CF.

Voice net for command and intelligence.

(2) *Battalion fire direction nets, FM*
Short titles, F1, F2, and F3.

Voice net for fire control and direction.

d. Restrictions on Radio Transmissions.

(1) Radio transmissions will be restricted to those required in carrying on authorized communication and will be made with minimum power consistent with satisfactory operation.

(2) Radio silence: All transmitters and receivers will be off.

(3) Emergency silence: Receiver will be on and transmitters will be off except—

(a) When it is necessary to report initial enemy contact on a silenced circuit.

(b) After silence has been lifted.

e. Displacement (Hq & Hq Btry).

(1) Movement of displacing echelon: Battalion CF.

(2) Registration in forward area: As directed by the S3.

(3) Remaining echelon in rear: Normal.

(4) Movement of remaining echelon: Battalion CF.

(5) After battalion closes in forward area: Normal.

f. Displacement (Firing Btry). Battalion CF net is used.

g. Operation.

(1) Radios must be properly sited in each position.

(2) Elevated antenna (AT-791) will be erected at each position but will be used only when required.

(3) Lowest power possible for reliable communication is used.

(4) A net control station (NCS) will monitor each net continuously.

(a) F1, F2, and F3 NCS: Bn FDC.

(b) CF NCS: COMMO.

E-37. Message Center

a. All message traffic processed through message center (except tactical messages or messages transmitted in clear text for delivery within the battalion) will be—

(1) Encrypted.

(2) Decrypted.

(3) Authenticated.

(4) Logged.

(5) Delivered.

b. Message center will maintain listing of status of both radio and wire and any other means of communication available.

c. Message center will maintain listing of exact locations of all battalion installations and will be prepared to guide visitors.

d. Battalion messenger will be at division artillery except during displacement of battalion; he will accompany the battalion during displacement so that he will know the new location of the battalion.

e. A battery representative will be at battalion except during displacement; he will accompany the battery during displacement so that he will know the new location of the battery.

ANNEX IV. Field Artillery Tactical Missions (Inherent Responsibilities)

Artillery with a tactical mission of—	Answers calls for fire in priority from—	Establishes liaison with—	Establishes communications with—	Has as its zone of fire—	Furnishes forward observers	Is positioned by—	Has its fires planned by—
General Support	1. Force artillery headquarters. 2. Own observers.	No inherent requirement.	No inherent requirement.	Zone of supported unit/formation.	No inherent requirement.	Force artillery headquarters.	Force artillery headquarters.
General Support Reinforcing.	1. Force artillery headquarters. 2. Reinforced artillery unit. 3. Own observers.	Reinforced artillery unit.	Reinforced artillery unit.	Zone of supported unit/formation to include zone of reinforced artillery unit.	Upon request of reinforced arty unit, subject to prior approval of force artillery hqs.	Force arty hqs or, subject to prior approval, the reinforced arty unit.	Force artillery headquarters.
Reinforcing	1. Reinforced artillery unit. 2. Own observers. 3. Force arty hqs.	Reinforced artillery unit.	Reinforced artillery unit.	Zone of fire of reinforced arty unit.	Upon request of reinforced arty unit.	Reinforced arty unit or ordered by force arty hqs.	Reinforced artillery unit.
Direct Support	1. Supported unit. 2. Own observers. 3. Force artillery hqs.	Supported unit (down to battalion level).	Supported unit.	Zone of supported unit.	To (each*) company-size maneuver element of supported unit.	Unit commander, as deemed necessary or ordered by force arty hqs.	(Develops own fire plan).

*Each applicable to US only.

E-38. Communication Security

a. Messages will be transmitted in clear text only when you are under actual hostilities, when the enemy does not have time to act upon information, and when time is not available for encryption. When these conditions exist, the commander or his authorized representative must authorize each classified message to be transmitted in the clear.

b. In case of compromises or loss of SOI's, SSI's or cryptographic material, a written report must be submitted to issuing authority through command channels within forty-eight hours. (References include AR 380-5 and (C)AR 380-40).

c. All transmissions and messages will be authenticated unless otherwise directed. Exceptions are nonnuclear fire missions.

d. The Communication-Electronic officer will brief forward observers on the use of CEOI and CESI.

E-39. Electronic Counter-Countermeasures

a. Report all jamming to the immediate supervisor, or the communications-electronics staff officer immediately.

b. Continue to operate through jamming by using proper siting, antennas, and antijamming techniques.

c. Communication officer will establish net control stations on alternate frequencies when jamming is apparent.

d. Stations will switch to alternate frequency only when mission cannot be accomplished on primary frequency.

E-40. Signal Supply

See section V, Logistics.

LTC Black

Annexes: I—Artillery Counterfire Information Form (omitted)
 II—Loading Plan for Hq, Hq & Svc Btry (omitted)
 III—Loading Plan for FA Btry, 105-mm, Towed, (omitted)
 IV—Field Artillery Tactical Missions
 V—Target Numbering System (omitted)
 VI—CB Defense
 VII—Nuclear and Radiological Defense
 VIII—Battalion Wire System (omitted)
 IX—Battalion Radio Nets (omitted)
 X—Loading Plan for Rail Movement (omitted)

XI—Type Loads, Airmobile Operations (omitted)**DISTRIBUTION:**

OFFICIAL

/s/ White

White

S3

Note. This SOP is intended only as a guide for units in the field. All units modify this example to take into consideration the peculiarities of their unit organization, mission, equipment, and environmental situation.

ANNEX VI (Chemical and Biological Defense) to Appendix E SOP**1. GENERAL**

a. Purpose. This annex standardizes procedures for defense against chemical and biological attacks and for operations in a contaminated environment.

b. Unit SOP. Subordinate unit SOP will conform. This SOP is applicable to all organic, attached, and supporting units.

2. REFERENCES

FM 21-40, FM 2-41, FM 21-48, FM 21-60, TM 3-220, TM 3-221 and AR 220-58.

3. ORGANIZATION

a. Subordinate Units. Each unit commander will appoint a CBR defense NCO and alternates to assist in the conduct of CBR defense training and operations in a contaminated environment.

b. CBR Defense Team. A CBR defense team will be formed to operate under the supervision of the unit commander. This team consists of the CBR team chief (CBR defense officer), two CBR defense NCO (one NCO to supervise the chemical detection and radiological survey parties and the other NCO to supervise the decontamination squad), and the personnel described below.

(1) Two chemical detection (and radiological monitoring) parties, one primary and one alternate, will be trained for each chemical agent detector kit and chemical agent alarm (and radiological survey meter) authorized the unit. Chemical reconnaissance personnel will be trained for the detection of contaminated terrain.

(2) A chemical decontamination squad will maintain a capability to perform minimum necessary decontamination of unit equipment and areas.

(3) Support and security personnel, as required.

4. RESPONSIBILITIES

a. Unit Commander. The unit commander is responsible for—

(1) Proficiency of the unit in all phases of chemical and biological (CB) defense.

(2) Designation and control of the unit mission-oriented protective posture (wearing of protective clothing and equipment) for operations in a chemical environment, consistent with the unit mission, temperature, and anticipated work rate.

(3) Insuring that appropriate warnings and alarms are transmitted on the unit voice radio command net immediately on receiving an alarm from the automatic chemical agent alarm system or other sources.

b. Unit CBR Defense Officer. The unit CBR defense officer makes necessary arrangements for personnel to operate any chemical protective and defensive equipment required, such as a collective chemical protection shelter and decontamination station.

c. First Sergeant. The first sergeant designates personnel to set up the M8 automatic chemical agent alarm when occupying a new position.

d. CBR Defense Team. The unit CBR defense team uses chemical agent detector equipment and the chemical agent alarm to detect a chemical attack, to reconnoiter terrain to be traversed or occupied by the unit, and to locate contaminated areas and mark their boundaries with designated markers. It decontaminates within its capabilities, the vital areas and equipment designated by the unit commander.

e. Sentries/Guards. Personnel designated for sentry/guard duty will have the following additional duties:

(1) Be especially alert to chemical and biological agents and means of delivery.

(2) Understand the unit's CBR warning system and means of warning.

(3) Periodically check men sleeping near the assigned post or position to make certain that they are masked.

(4) Know the location of battery command post and the FDC.

f. All Personnel. All personnel must understand the unit system of personnel identification and recognition (para 9 below). All personnel must understand the indications of a chemical or biological attack and sound the alarm, when required.

5. ALARMS AND WARNING SYSTEMS

Battery/battalion radio/telephone operators will alert the firing section/batteries on the battery/battalion radio/telephone net of a chemical or biological attack, will sound the local alarm (*b* below), and will transmit the appropriate NBC

1 chemical or biological attack report (app II) to battalion/group/division artillery.

a. Unit Chemical and Biological Attack Warning. The chemical alarm and warning system consists of the M8 automatic chemical agent alarm, chemical agent detector kits, and the radio/telephone warning net. Warnings of a chemical or biological attack will be transmitted on the battery/battalion command net with a FLASH precedence to all units, using brevity code "GAS" for a chemical attack and "MASK" for a biological attack.

b. Local Alarm. The local alarm for a chemical or biological attack is given by the individual after putting on his protective mask (if not already masked according to the mission-oriented protective posture), and then giving the approved hand signals, the vocal alarm, and, if appropriate, the (designated) percussion-type alarm located at (____). The vocal alarm for a chemical or biological spray attack is "SPRAY," for a chemical attack by any other means is "GAS," and for a biological attack by any other means is "MASK."

6. PROCEDURES

If alerted to a possible chemical or biological attack, units will assume that all artillery and air attacks are chemical attacks (until proved otherwise) and will take appropriate defensive action for a chemical attack. Individuals will mask automatically when under artillery and air attack, when they observe symptoms of chemical agents in personnel, or when they hear the chemical or biological attack alarm.

a. Action Before Chemical Attack. Units alerted to a possible or imminent chemical attack will acknowledge receipt of the alert and insure that—

(1) Chemical detection and warning systems are operational.

(2) Individual protective measures and the mission-oriented protective posture are adequately controlled.

(3) Collective protection shelters, if any, are operational.

b. Action During Chemical Attack. Units will alert all personnel and make sure that they are adhering to the designated mission-oriented protective posture.

c. Action After Chemical Attack.

(1) If appropriate, unit commander will consider changes in the mission-oriented protective posture.

(2) Personnel will check their clothing and equipment to determine whether they are contaminated. If contaminated, personnel apply

first aid and decontaminate themselves without orders. They will draw fresh clothing and equipment, as required, from the supply point. Contaminated clothing will be processed at the supply point as directed. Personnel assigned to crew-served weapons and equipment will decontaminate them with STB slurry or DS2, as directed.

(3) Decontaminating personnel will assist in decontaminating areas, vehicles, and equipment designated by the unit commander.

(4) Filter elements of M17-series protective masks will be replaced as required.

7. DECONTAMINATION

a. Individual. Individuals decontaminate themselves and their equipment, when required, and continue their mission.

b. Crew-served Weapons and Equipment. The firing sections will decontaminate those portions of the guns/howitzers that require human contact during firing of the piece. Ammunition will be decontaminated as necessary for handling and firing. As time and mission permit, additional decontamination will be carried out.

c. Units. The unit commander will designate other areas and items to be decontaminated and the priority for decontamination.

8. INTELLIGENCE

a. CB Agent Detection and Identification System. All enemy chemical attacks will be reported to battery/battalion with or without the identity of the agent used. If the agent used cannot be detected by the chemical agent detector kit, this information will be included in a subsequent report.

b. Reporting of Chemical and Biological Attacks and Warnings of CB Hazard Areas. See tab II.

9. IDENTIFICATION OF PERSONNEL

When personnel are wearing chemical protective overgarments and protective mask and hood, the following identification procedures will be used:

a. Each person in a section will be issued two lengths of engineer tape (approximately 18 inches) color coded by sections.

b. Strips will be attached to the web gear, with one placed on the pistol belt center rear and one placed on the harness below the first aid packet.

c. Subdued rank insignia will be worn on all headgear; 3-inch lengths of masking tape, bearing the individual's name, will be attached to the front and rear of the helmet.

d. Section leaders will wear a color-coded triangle of masking tape above their name tape

on helmet; chief of firing battery will wear a color-coded diamond.

F. A. CANNON
CPT, Arty
Commanding

- TAB I. Roster of Personnel (omitted)
II. Examples of NBC Reports (omitted)
III. Operation, Safe-Entry, and Exit of Protective Shelters (omitted) TM 3-221).
IV. Operations in a Contaminated Area (omitted)
V. Individual and Unit Contamination (omitted)
VI. Replacement of Filter Elements for the M17-series Masks (omitted)

ANNEX VII (Nuclear and Radiological Defense) to Appendix E SOP

1. GENERAL

a. Purpose. This annex prescribes procedures for defense against nuclear attack and radiological hazard. It provides guidance for—

(1) Procedures to be followed by individuals and units during and following a nuclear attack.

(2) Predictions of fallout from a nuclear burst.

(3) Radiological monitoring and survey.

b. Unit SOP. Subordinate unit SOP will conform. This SOP is applicable to all organic, attached, and supporting units.

2. REFERENCES

FM 21-40, FM 21-41, FM 21-48, FM 3-12, TM 3-210, and AR 220-58.

3. ORGANIZATION

Unit personnel will be used on an additional duty basis. See Annex VI for a roster of personnel.

a. CBR Defense Team. Same as paragraph 3b., Annex VI.

b. Area Damage Control Party. The battery/battalion will organize, equip, and train an area damage control party consisting of one NCO and six enlisted men for employment on call of the battalion/group/division artillery. Equipment will include two 1/4-ton trucks or one 3/4-ton truck, shovels, axes, survey meters, dosimeters, and other items as directed.

c. Light Rescue, Labor, and Decontamination Squad. The battery/battalion will organize, equip, and train a light rescue, labor, and decontamination squad consisting of one NCO or

specialist and six enlisted men for employment on call of the battalion/group/division artillery. Equipment will include two 1/4-ton trucks or one 3/4-ton truck, a pick, two shovels, two axes, two wire cutters, survey meters, and dosimeters, as available.

d. Emergency Decontamination Squad. The battery will organize, equip, and train an emergency decontamination squad consisting of one NCO or specialist and enlisted men as required for employment on call of the battalion. The following equipment and supplies, if not organic, will be furnished as required: shovels, dosimeters and survey meters, personnel monitoring instruments, and such chemical decontaminating equipment and material as required.

4. RESPONSIBILITIES

a. Unit Commander. The commander is responsible for—

(1) Proficiency of the unit in all phases of defense against nuclear attack and radiological hazards.

(2) Training and availability of personnel listed in paragraph 3.

(3) Actions to minimize exposure to radiological hazards (tab III).

b. CBR Defense Team. This team monitors terrain or surveys radiologically contaminated areas, as directed, and marks the radioactive boundaries with "ATOM" markers.

5. WARNINGS AND ALARMS

Designated personnel will report nuclear attacks and fallout warnings through the command radio/telephone net, sound the local alarm when appropriate, and transmit NBC 1 and 4 reports (tab II) to the battalion/group/division artillery S2. The brevity code for fallout is "FALLOUT."

a. Unit Report. Information relative to nuclear burst and fallout will be reported according to tab II.

b. Local Alarm. The local alarm will be given when fallout is expected in the unit area. The vocal alarm for fallout is "FALLOUT."

6. PROCEDURES IMMEDIATELY FOLLOWING A NUCLEAR ATTACK

Immediately following a nuclear attack, the following actions will be taken automatically, without orders:

a. Individuals and crews will establish contact with immediate superiors. As soon as the blast wave has passed and debris has stopped falling, the chiefs of sections will measure the deflection to the nuclear burst with the panoramic telescope and report it to the FDC.

Additional cloud parameters will be measured and reported as requested by the FDC.

b. Individuals will take the following actions under fallout conditions consistent with the mission:

(1) Acquire the following protection in the order listed (remain in the shelter until the area has been declared safe or until exit is required for urgent reasons):

(a) Underground shelter.

(b) Foxhole with overhead cover.

(c) Armored vehicles, when shelters in (a) and (b) above are not available and time precludes constructing these shelters.

(d) Buildings of masonry construction in preference to buildings of wood or other construction.

(e) Clothing or shelter halves to cover all exposed skin; and additional cover under shelter halves, blankets, or canvas.

(f) Vehicles with sandbags used to cover floor and sides.

(2) After fallout has stopped, decontaminate themselves, if required, by taking the actions listed below, when practicable:

(a) Brush clothing and equipment thoroughly to remove fallout (this should be done away from the area that the individual will occupy).

(b) Bathe, if possible (preferably by showering), and change clothing.

(c) Decontaminate individual equipment by brushing, wiping, and, as appropriate, scrubbing.

(d) Decontaminate the immediate area where located by turning soil (or hosing, if practicable).

(e) Clean equipment, as required.

(3) Maintain full canteens and sufficient rations for at least a 24-hour stay in the contaminated area.

(4) Wear respirator or handkerchief over nose and mouth if dust hinders breathing.

(5) When practicable, reduce stay time in the contaminated area.

c. Subordinate units will—

(1) Turn on radiac instruments and start continuous monitoring.

(2) Report to next higher headquarters any element out of contact.

(3) Take the following protective measures:

(a) Prepare for early movement.

(b) Displace, as directed to avoid radiological hazard, and continue mission.

(4) Avoid doses in excess of radiation exposure guide in tab III.

(5) Report information relative to nuclear burst by NBC 1 report (tab II).

(6) Report initial time of arrival and dose rate of fallout in the unit area of NBC 4 report (tab II).

7. RADIOLOGICAL FALLOUT PREDICTION

The battery/battalion monitors the battalion/group/division artillery net for fallout prediction data. When the battery observes a nuclear burst and before receiving fallout prediction data, the simplified fallout prediction method is used to obtain an estimate of the potential hazard area, provided that ground zero can be approximated. The M4A1 nuclear yield calculator of the M28A1 nuclear calculator set, nuclear burst data, the division effective downwind message, and the M5A1 radiological fallout predictor are used to predict the fallout area.

8. RADIOLOGICAL MONITORING

The battery/battalion will maintain a monitor at the CP/FDC. When appropriate, the monitor will make routine checks of the battery/battalion area and CP/FDC each hour.

a. Continuous monitoring will be initiated—

(1) On receipt of a fallout warning (NBC 3 report).

(2) When ordered by the commander.

(3) After a nuclear burst has been seen or heard.

(4) When the unit or any section or platoon is moving.

(5) When a nuclear strike is reported.

(6) When radiation above 1 rad/hr is detected by periodic monitoring.

b. During continuous monitoring, all readings will be made in the same location, except when the unit is moving or other factors make it impracticable. The following information will be reported to battalion/group/division artillery.

(1) The location, dose rate, and time of the initial dose rate of 1 rad/hr.

(2) The peak dose rate recorded.

Note. The dose rate, location, and time of an increase or decrease of 10 rad/hr are recorded until the dose rate reaches 50 rad/hr. Any increase or decrease from 50 rad/hr will be reported to the battalion/group/division artillery. These dose rates are used for example only. Frequency of readings will depend on the situation, and dose rate criteria will be specified by higher headquarters.

(3) The correlation factor data for the shelter or vehicle of the monitor.

(4) Summary report described in paragraph 9c below.

c. Continuous monitoring will stop—

(1) On instructions from the battalion/group/division artillery.

(2) When the dose rate falls below 1 rad/hr (except for units on the move).

9. REPORTING PROCEDURE

Refer to tab II for details.

a. The initial detection of 1 rad/hr will be reported to the battery/battalion with an IMMEDIATE precedence on the unit command net. The report will be made in the clear (unless otherwise specified), giving location, dose rate, and time detected. The unit will submit an NBC 4 report to battalion/group/division artillery with an IMMEDIATE precedence.

b. Subsequent reports will be screened and consolidated by the unit. These reports will include the average level of radioactivity in the unit(s) area(s) and the location and time of the highest dose rate in the area(s). Reports will be submitted as the dose rate in the area is rising; at the first indication that the dose rate is beginning to decline; and after that as directed. These reports will be assigned an IMMEDIATE precedence, consistent with operational requirements for communication facilities.

c. A *summary* report will be submitted to battalion/group/division artillery, when directed. This may consist of an overlay showing the radiation situation in the area as compiled from monitoring reports.

10. RADIOLOGICAL SURVEYS

Radiological surveys will be conducted only on orders of the battalion or higher headquarters. Ground survey parties will follow the prescribed course and will report the dose rate, location, and time of reading at points designated. Readings will be taken with the survey meter held approximately 1 meter above the ground (waist high). In open areas, readings will be taken at least 10 meters from buildings or other large structures. In built-up areas, readings will be taken in the center of the street or at intersections. Mounted monitors will determine the shielding correlation factors and include these data in the first survey report. Readings will be recorded on DA Form 1971-R.

F. A. CANNON
CPT, Arty
Commanding

- TAB I. Roster of Personnel (omitted)
II. Examples of NBC Reports (omitted)
III. Radiological Exposure Data (omitted) (FM 3-12)
IV. Operations in a Contaminated Environment (omitted)

APPENDIX F

STANDARDIZATION AGREEMENT 2134

F-1. General

Standardization agreements (STANAG) are international (NATO, CENTO, and SEATO) agreements designed to facilitate inter-allied operations. Upon ratification by the United States, a STANAG is binding upon US Armed Forces (entirely or with exceptions as noted). This appendix is an EXTRACT of Chapter 6, 'Instructions for Forward Air Controllers', of STANAG 2134—Offensive Air Support Operations.

F-2. STANAG 2134—Offensive Air Support Operations

NATO UNCLASSIFIED DETAILS OF AGREEMENT

AGREEMENT:

1. It is agreed that the NATO Armed Forces are to use the Allied Tactical Publication entitled "Offensive Air Support Operations" (Short title: ATP-27 (NAVY) (ARMY) (AIR) to—

- a. Provide the NATO Armed Forces with a common understanding of the problem involved in offensive air support operations.
- b. Standardize the terminology, methods and procedures to be employed in planning and conducting offensive air support operations.

* * * * *

EXTRACT CHAPTER 6 INSTRUCTIONS FOR FORWARD AIR CONTROLLERS

Section I. GENERAL

601. This chapter explains the definitions, techniques and procedures which may be used when combat aircraft are engaged in close air support of land forces and are directed by Forward Air Controllers (FACs).

602. To facilitate cross-operating, it has been agreed that standard attack profiles and a standard briefing form are necessary for use when aircraft are executing low-level single pass attacks under FAC control. The aim of this Chapter is to lay down these standards, and thereby enable the pilot to carry out a single pass attack as this gives him the best chance of survival in a sophisticated enemy anti-aircraft environment. However, it requires a high standard of training and mutual understanding between pilot and FAC. It may be difficult to achieve this when cross-operating.

603. Nothing in this Chapter is intended in any way to restrict the development of tactics or procedures by national air forces or NATO Commands. The requirement is that all aircraft which may be required to support ground troops of another nation or command and all FACs who may be required to direct aircraft of another nation or command are able to operate these procedures.

Section II. DEFINITIONS

(These definitions are taken from AAP-6— "The NATO Glossary of Military Terms and Definitions in English and French," where applicable.)

604. *Forward Air Controller (FAC)*. A FAC is an officer who, from a forward position, directs the action of combat aircraft engaged in offensive air support of land forces. Most nations agree that a FAC should be a current operational attack pilot who has received special training. Some nations have found it expedient to train officers in the land forces to perform these functions. Provided these officers are considered capable by their national air or joint authorities they may be permitted, with

the approval of the national authority supplying the aircraft, to direct missions in accordance with these procedures.

605. *Contact Point*.* The contact point is a position at which the mission leader makes initial radio telephone contact with the forward air controller.

606. *Orbit Point*.* The orbit point is a geographically defined reference point over land or water, used in stationing airborne aircraft.

607. *Initial Point*.* The initial point is a geographic reference point or electronic fix from which a pilot doing a low-level attack starts his timed run towards the target or pull-up point.

608. *Pull-up Point (PUP)*. The pull-up point is the point at which a pilot starts to climb or maneuver from a low-level approach in order to gain sufficient height from which to execute the attack.

609. *Turn-in Point (TIP)*. The turn-in point is the point at which a pilot starts to turn from the approach direction to the line of attack.

610. *Reference Point*. An easily identifiable point from which adjustments are made in the delivery of close air support.

611. *Forward Edge Battle Area (FEBA)*. The foremost limits of a series of areas in which ground combat units are deployed, excluding the areas in which the covering or screening forces are operating, designed to coordinate fire support, the positioning of forces or the maneuver of units.

Section III. METHODS OF ATTACK

612. The three methods described below have proved suitable for attacking most types of targets, as they allow the pilots the maximum time to look for the target in a one-pass attack.

613. The method being used will be apparent from the FAC briefing. (For standard briefing see annex A to this chapter.)

* Depending on the situational circumstances, the points mentioned (605, 606 and 607) can be identical.

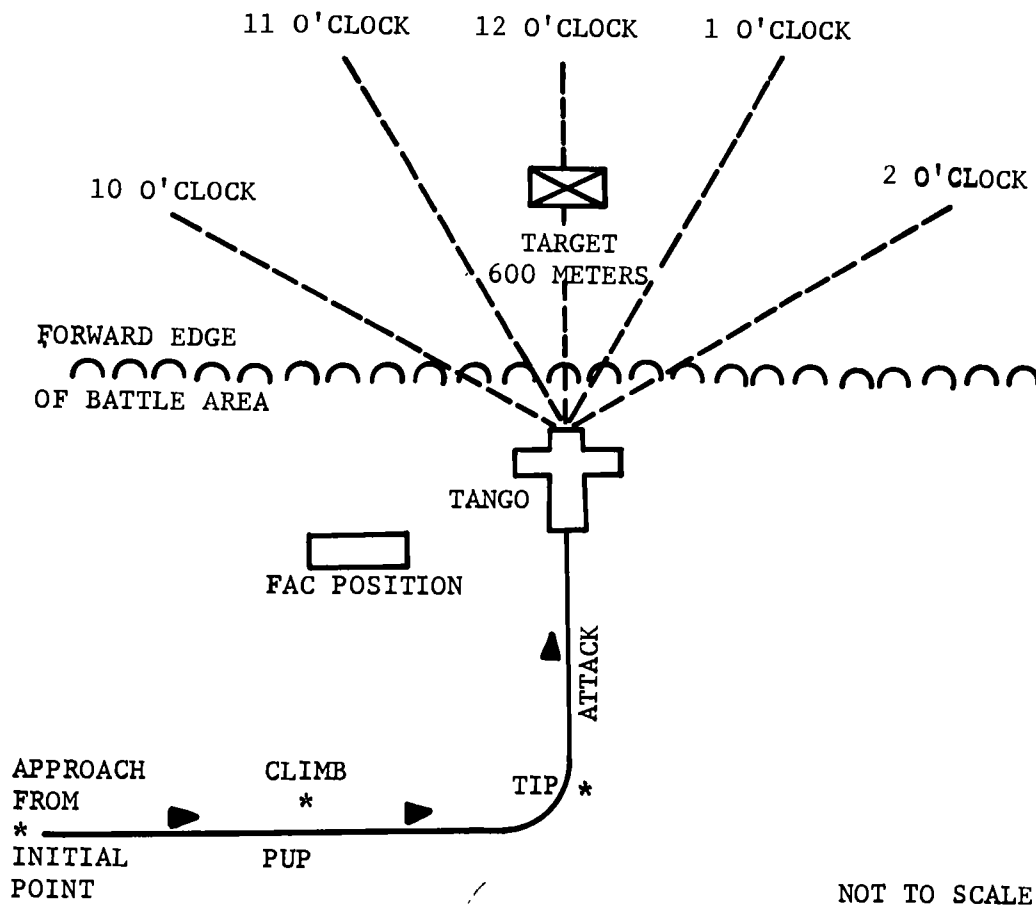


Figure F6-1. The Panel Method.

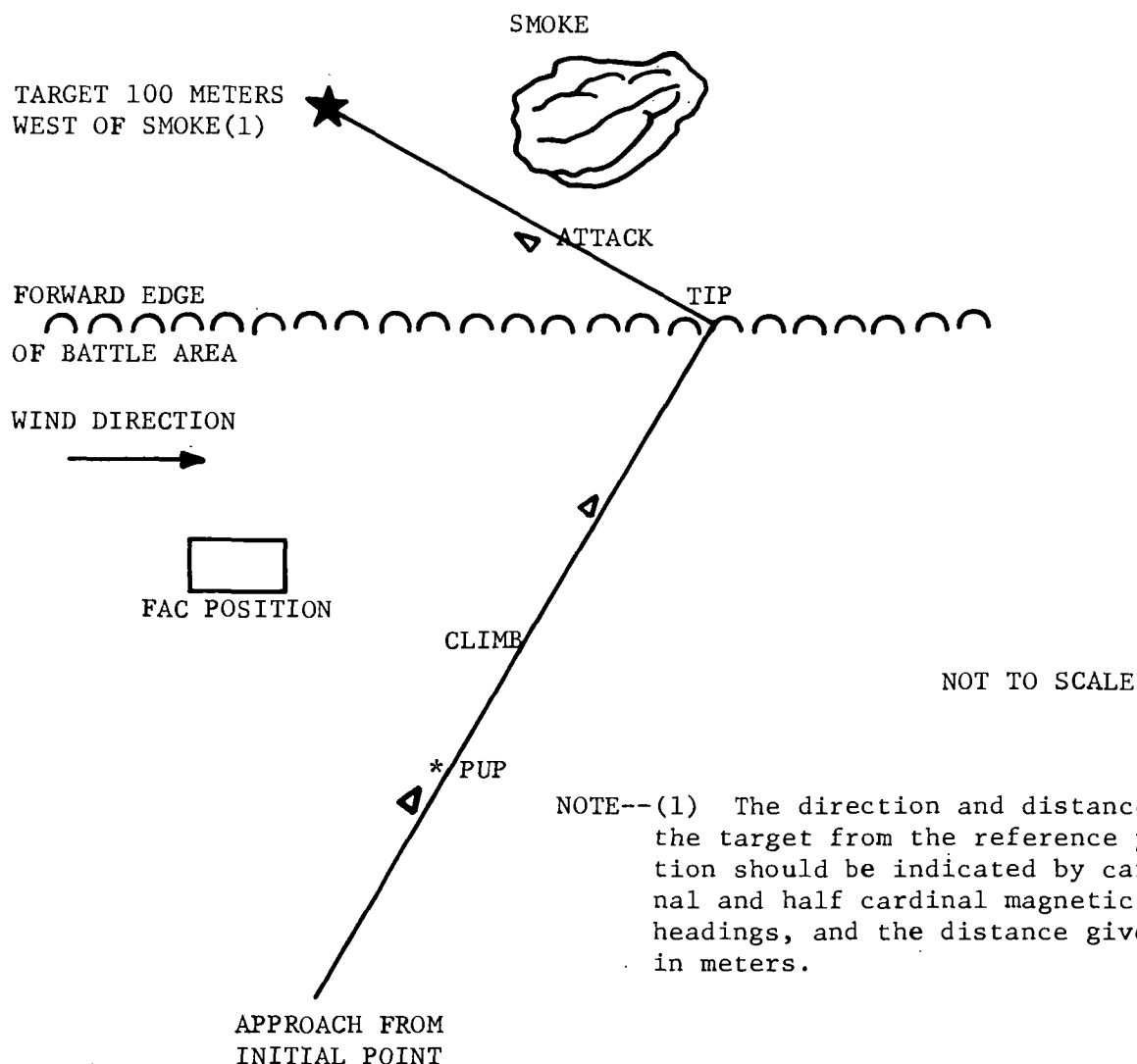


Figure F6-2. Reference Point Method.

Panel Method

614. In this method the FAC indicates the target by reference to a cross of fluorescent panels (known as the T or TANGO) laid out at or near the FAC's position. To enable it to be seen by the pilot of a high speed aircraft, it needs to be large. The panels should be at least 70 centimeters (28 inches) wide and the overall dimensions of the T should be not less than 11 meters (36 feet) by 7 meters (23 feet). These fluorescent panels should be displayed so as not to reveal the location of friendly lines or the FAC.

615. The FAC should try to align the panels on the target so that the pilot will pass over them on his attack run. This gives the FAC the best chance of checking that the pilot has located the proper target and correcting his course if necessary. However, there will be many occasions when the FAC will be unable to position himself or the T in line with the most favorable heading. This does not invalidate the method.

616. Having decided on the attack heading, the FAC draws it in on the map, and at a suitable distance back from the target he marks the TIP. This distance will vary depending on the type of attack and the weapons being used. The FAC then selects one of the nominated initial points which will give a turn of between 70 degrees and 100 degrees between the approach track and the attack track. He then marks the PUP, measuring back along the approach track from the TIP. Normally the distance from target to TIP will be the same as TIP to PUP. The FAC then measures and gives the

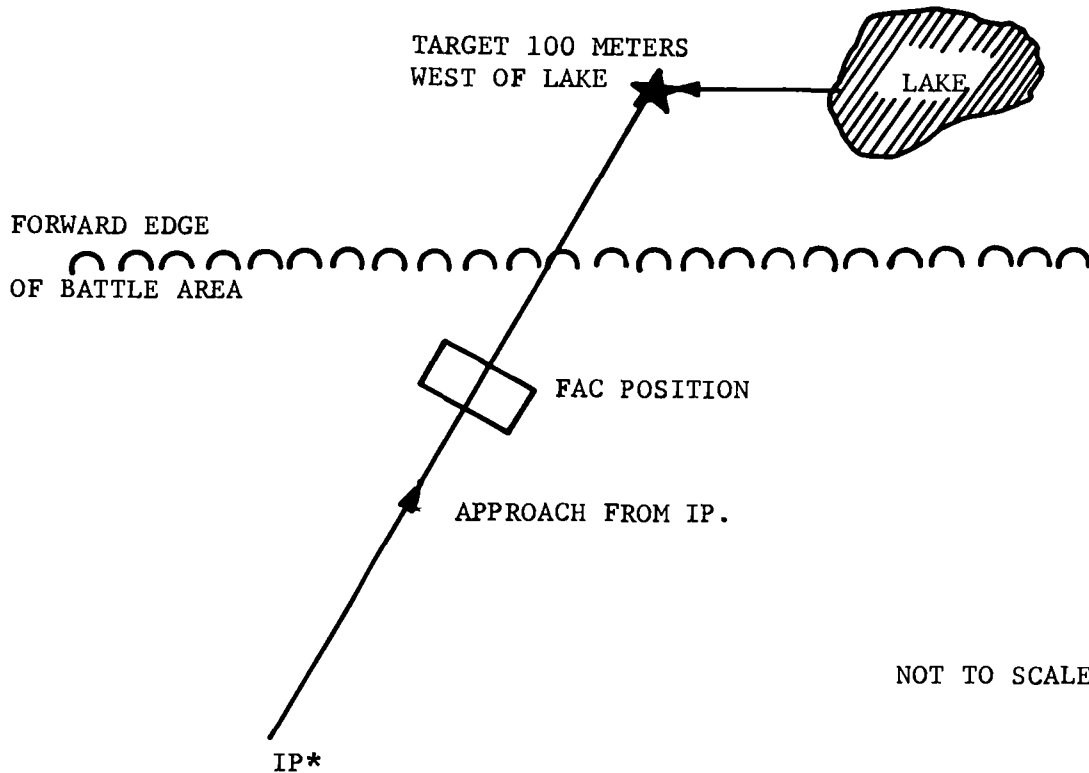


Figure F6-3. Straight in Approach Method.

pilot the magnetic track and time to fly at a prearranged speed (normally 450, 420 or 360 knots to simplify the arithmetic).

617. Having completed the briefing and received clearance to attack, the pilot leaves the initial point at low level. At, or before PUP, the FAC will sight the aircraft and will report "MISSION-visual." He then flashes a signaling lamp if available and gives clock position and distance indications to help the pilot to locate the T. On sighting the T the pilot reports "contact TANGO." The FAC then passes such other instructions as may be needed to help the pilot to identify the target. As soon as he has picked up his target, the pilot reports "contact target." No further transmission should be made by the FAC unless it is apparent that the pilot has picked up the wrong target.

618. If the FAC wishes to call off the attack he transmits "stop-stop-stop." This instruction is mandatory and the aircraft must break off the attack immediately.

619. The T should normally be aligned on the target. If it cannot be, perhaps because the target is moving, references are given by clock code as indicated in figure F6-1 and the radio telephone procedure explained at annex B to this chapter.

620. This method is of value in terrain which has no readily identifiable features or where smoke for target indication is inappropriate or not available.

Reference Point Method

621. This method requires a reference point close to the target which is clearly visible to the pilot as he pulls up and turns into the attack. A landmark or natural feature can be used provided it is clearly visible from the air and there is no possibility of confusion with similar features in the vicinity. Generally the most satisfactory reference point is made by using smoke from marker shells fired by guns, mortars or rocket projectors. Provision is made in the briefing form for indicating the nature and position of the Reference Point.

622. When smoke is used, it should be placed down-wind in order not to obscure the target. The method of carrying out this attack will be apparent from Figure F6-2 and the example at Annex C to this chapter.

623. The FAC arranges for the smoke to be fired during the timed run in from the contact point so that it is clearly visible when the aircraft reaches PUP. As the exact position of the smoke in relation

to the target will not be known until the round bursts, the FAC should pass final details of bearing and distance from the marker to the target as the pilot pulls up.

624. As soon as the pilot has identified the target he sends "contact target." The FAC should then send no more transmissions unless it is apparent that the pilot has selected the wrong target. He may then attempt to correct the heading or call "stop-stop-stop" which, as in the panel method (paragraph 617), is mandatory.

Straight-in Approach Method

625. This method can be used in connection with a T, a reference point or both. In this method there is no TIP and it should be regarded as the easiest way to get the aircraft on to the target. The aircraft might have to pull up slightly when flying very low to be able to identify the target or reference point. The FAC should try to position himself so that the pilot will pass over him on his attack run from CP or IP straight to the target. When sighting the aircraft the FAC will give the clock position and distance indications to help the pilot to locate the T, reference point, target, or he may only correct his course if necessary.

626. This method is specially suitable for weapons delivery such as napalm.

STANDARD BRIEFING FORM FOR FORWARD AIR CONTROLLERS

(Omit all items not required)

A. PILOT CHECKS IN: The pilot gives the following information:—

		Mission No.	Mission No.	Mission No.	Mission No.	Mission No.
Attack Details	1. Mission Number/Call Sign.					
	2. Contact point and height.					
	3. Aircraft type and number.					
	4. Armament.					
	5. Duration of task.					
	6. Target allocated.					

B. TARGET INFORMATION: The FAC gives the following information:—

FAC's Target Information	1. FAC Call Sign.					
	2. Target Grid No. and Grid Reference.					
	3a. Description.					
	3b. Height AMSL*—FT.					
	4a. Position of target from T (used in panel method).					
	4b. Description of reference point and position of target in relation to it.					
	5. Information friendly forces.					
	6. Surface Wind and Hazards.					
	7. Track (magnetic) from Initial Point at Knots. For time of (minutes and seconds) Attack Heading (Turn left or right).					
	8. Time of attack.					

C. ATTACK CLEARANCE: You are clear to attack. Report when leaving initial point and pulling up.

D. ON COMPLETION: The pilot makes his in-flight report.

Notes:

*AMSL = Above Mean Sea Level.

When section B is being used to brief a pilot, it should be transmitted in brief "packets" to permit the passage of emergency messages should this become necessary. The pilot should repeat the grid reference of this target, any information about friendly forces, the attack heading, time of attack, and the Track Magnetic from the initial point. If the attack is to be made "as soon as possible," the pilot should indicate a time when he expects to leave the initial point estimated in minutes. If smoke is to be used as a target indication, it should be called for in sufficient time to be effective when the attack goes in.

Annex B to Chapter 6

EXAMPLE OF CONTROL PROCEDURE USING GROUND PANEL METHOD

Serial	Mission Leader	FAC	Remarks
1	FORTUNE this is 501 Leader—over.		Pilot and FAC establish communications and pilot gives details from Part A.
2		501 this is FORTUNE Roger—over.	
3	Roger. At Contact Point ROMEO—four G.91 armament rockets, Target Echo Mike 5—over.		
4		(This is FORTUNE). Target Echo Mike 5. Grid reference 526314. Twelve tanks in valley. Height 1,000 feet—over.	Omit call-sign if serial 4 follows immediately after serial 3.
5	Grid reference 526314—over.		Pilot reads back grid reference.
6		Correct. Target is 12 o'clock 1,500 meters my TANGO. Own troops 500 meters SOUTH of target marked by red panels—over.	
7	Own troops 500 meters SOUTH-red panels—over.		Pilot reads back information on locations of friendly forces.
8		Correct. Surface wind from southwest about 20 knots. There is a line of pylons 200 meters this side of target about 100 feet high—over.	
9	Roger—over.		
10		From initial point ROMEO steer 030° Magnetic at 420 knots for 2 minutes 20 seconds—over.	
11	Track 030° Magnetic at 420 knots for 2 minutes 20 seconds—over.		Pilot reads back details of track speed and time.
12		Correct. Attack LEFT on to 310°. Attack as soon as possible. You are clear to attack. Report when leaving initial point and pulling up—over.	
13	LEFT on to 310° Will attack in 4 minutes—out.		
14	501 Leader. Departing contact point now—over.		FAC starts stopwatch, gets signalling lamp ready and looks in direction of PUP.
15		Roger—out.	
16		Visual. My TANGO is 11 o'clock—over.	FAC starts flashing as soon as he sees aircraft.
17	Roger—Pulling up now—over.		
18		Roger TANGO now 10 o'clock 3 miles—over.*	FAC continues to give relative position of T until pilot reports contact T.
19	Contact TANGO—out.		
20		Turn left 10° tanks are along hedge at far side of ploughed field—over.	
21	Contact Target—out.		FAC sends no further transmission unless pilot is attacking wrong target when FAC may send STOP—STOP—STOP.

*Distance may be given in meters or miles; speeds may be given in nautical miles or kilometers per hour depending on local Standard Operating Procedures.

EXAMPLE OF CONTROL PROCEDURE USING REFERENCE POINT METHOD

Serial	Mission leader	FAC	Remarks
1	FORTUNE this is Leader—over.		Mission leader and FAC establish communications.
2		201 Leader. This is FORTUNE, Roger—over.	
3	Roger. At contact point ROMEO 3,000 feet. . . four G.91 armament rockets, . . . with you for 20 minutes—over.		Pilot gives details from Part A of briefing form. As this is Air Alert Missions, duration is given but not target.
4		Go to initial point PAPA—over.	FAC has decided initial point P is more suitable for target to be attacked. Suitable initial points have been selected in advance and notified to all concerned.
5	Wilco—out.		
6	201 Leader at initial point PAPA—over.		
7		FORTUNE Target Echo Mike 6. . . grid reference MC 561902. Twelve tanks in valley, height of target 1,000 feet—over.	
8	Grid reference MC 561902—over.		Pilot reads back grid reference of target.
9		Correct. Reference point black rock at grid reference 565905. Will mark with smoke. Target is 500 meters southwest—over.	
10	Roger—over.		
11		Own troops NIL within 1,000 meters—over.*	Paragraph 5 of briefing form is always included.
12	Own troops NIL within 1,000 meters—over.		Pilot always checks back own troops.
13		Correct, Light flak north of target—over.	Wind is less than 10 knots so it is omitted.
14	Roger—over.		
15		From initial point PAPA steer 030° Magnetic at 420 knots for 2 minutes 20 seconds—over.	
16	Roger. 030° at 420 knots for 2 minutes 20 seconds—over.		Mission leader reads back course speed and time.
17		Correct. Attack left on to 310°, attack as soon as possible. You are clear to attack. Report when leaving initial point and pulling up—over.	
18	Left on 310° leaving initial point now—out.		FAC starts stopwatch.
19	201 Leader. Pulling up now—out.		
20		Red smoke is 100 meters SOUTH of black rocks. Target is 500 meters WEST of smoke at bend of river.*	
21	Contact target—out.		

*Distance may be given in meters or miles; speeds may be given in nautical miles or kilometers per hour depending on local Standard Operating Procedures.

Note. *Indicates material superseded by FM 6-50

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*FM 6-140

FIELD MANUAL

No. 6-140

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 April 1973

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CHAPTER 3 ORGANIZATION

Section I. THE HEADQUARTERS AND HEADQUARTERS (AND SERVICE) BATTERY

3-1. General

a. Organization. Most field artillery battalions are organized with a headquarters and headquarters battery (HHB), a specified number of firing batteries (cannon, rocket, missile, aerial), and a service battery. In some battalions, the headquarters and headquarters battery and the service battery are combined into a headquarters, headquarters and service battery (HH&SB). Figure 3-1 shows the field artillery organizations of the infantry, armored, mechanized, airborne, and airmobile divisions. Figure 3-2 shows the field artillery organizations of army; corps; group; separate infantry, armored/mechanized, and airborne brigades; and the armored cavalry squadron.

b. Mission. The mission of headquarters battery is to assist the commander and his staff in the performance of their duties by providing the personnel, equipment, and facilities to operate the headquarters and to provide administrative, operations, supply, maintenance, and communication support to the elements of the command.

3-2. Organization and Functions

a. The organization and staff of a headquarters and headquarters battery of a direct support field artillery battalion (divisional) are shown in figures 3-3 and 3-4 respectively. The battalion headquarters consists of the battalion commander and his staff. The headquarters battery is normally composed of the following elements:

- (1) Battery headquarters.
- (2) Headquarters support section.
- (3) Operations and fire direction section.
- (4) Target acquisition platoon (survey, radar, and forward observer section), and meteorological section when authorized.
- (5) Communications platoon (radio and wire sections).
- (6) Liaison section(s) (maneuver brigade and maneuver battalion).
- (7) Medical section.

(8) Air defense section.

b. In battalions with a combined headquarters and headquarters battery and service battery, the headquarters battery includes the elements necessary to perform the following additional functions:

- (1) Personnel administration (when the battalion operates separately).
- (2) Ammunition supply.
- (3) Supply (other than class V).
- (4) Maintenance of vehicles and equipment.

c. The battery headquarters is supervised by the headquarters battery commander. The first sergeant is his principal enlisted assistant and performs the functions of battery administration, mess, supply, and maintenance.

d. The headquarters support section is supervised by the battalion S1. The section is responsible for preparing the administrative correspondence for the battalion, maintaining liaison with the division administration company in matters concerning personnel, and furnishing the radiotelephone operators/drivers for the battalion commander and the battalion executive officer.

e. The operations and fire direction section is supervised by the S3 and performs fire direction and fire planning for the battalion. In addition to the fire direction capability of this section, each cannon battery has a fire direction capability.

f. The target acquisition platoon consists of a platoon headquarters, a survey section, a radar section, and a forward observer section, and when authorized, a meteorological section. The platoon is supervised by the reconnaissance and survey officer and performs the functions of survey, intelligence, target location, adjustment of fires and surveillance, and in some cases determination of meteorological data for the battalion as directed by the S2. The composite 155-mm/8-inch howitzer battalion of the infantry division artillery, the 8-inch howitzer battalion of the armored and mechanized infantry division artillery, and each corps

	<i>Infantry Div Arty</i>	<i>Armd/Mech Div Arty</i>	<i>Airborne Div Arty</i>	<i>Airmobile Div Arty</i>
H&HB div arty (inf)	X 6-302___			
FA bn, 105-mm (towed) (3) HH Btry FA btry, 105-mm (3) Svc btry	X 6-155___			
FA bn, 155-mm (towed)/ 8-inch (SP) H&H btry FA btry, 155-mm (3) FA btry, 8-inch (1) Svc btry	X 6-165___			
FA bn, Honest John HHS btry FA btry, HJ (2)	X 6-175___			
H&HB div arty (Armd/Mech)		X 6-302___		
FA bn, 155-mm (SP) (3) H&H btry FA btry, 155-mm (3) Svc btry		X 6-365___		
FA bn, 8-inch (SP) H&H btry FA btry, 8-inch (3) Svc btry		6-395___		
FA bn, Honest John HHS btry FA btry, HJ (2)		X 6-175___		
H&HB div arty (Airborne)			X 6-201___	
FA bn, 105-mm (towed) (3) HH&S btry FA btry, 105-mm (3)			X 6-215___	
H&HB div arty (Airmobile)				X 6-701___
FA bn, 105-mm (towed) (3) HH&S btry FA btry, 105-mm (3)				X 6-705___
FA bn, 155-mm (towed) (1) HH btry FA btry, 155-mm (3) Svc Btry				X 6-715___
FA bn, aerial field artillery HH&S btry FA btry, aerial FA (3)				X 6-725___
Aviation btry (1)				X 6-702___

Figure 3-1. Field artillery organization—divisional.

	Corps Arty	Group Arty	Sep Bde Inf	Sep Bde Lt Inf	Sep Bde Air- borne	Sep Bde Armd/ Mech	Army/ Corps Arty	Armd Cav Sqn
H&H btry, corps arty	X							
H&H Btry, FA group		X 6-401___						
FA bn 105-mm (towed) HH&S btry FA btry (3)				X 6-115___				
FA bn 105-mm (towed) HH&S btry FA btry (3)					X 6-215___			
FA bn 155-mm (SP) HH btry FA btry (3) Svc btry						X 6-365___		
FA bn 105-mm (towed) H&H btry FA btry, 105-mm (3) Svc btry			X 6-185___				X 6-405___	
FA bn 155-mm (towed) H&H btry FA btry, 155-mm (3) Svc btry							X 6-425___	
FA bn 155-mm (SP) H&H btry FA btry 155-mm (3) Svc btry							X 6-455___	
FA bn 175-mm (SP) H&H btry FA btry, 175-mm (3) Svc btry							X 6-435___	
FA bn, 8-inch (SP) H&H btry FA btry, 8-inch (3) Svc btry							X 6-445___	
FA bn, Honest John HHS btry FA btry, HJ (3)							X 6-525___	
FA bn, Sergeant HHS btry FA btry, Sergeant (2)							X 6-555___	
FA Bde, Pershing H&H btry							X 6-604___	
FA bn, Pershing H&H btry FA btry Pershing (4) Svc btry							X 6-615___	
FA btry, 155-mm (SP)								X 6-37___

Figure 3-2. Field artillery organizations (nondivisional).

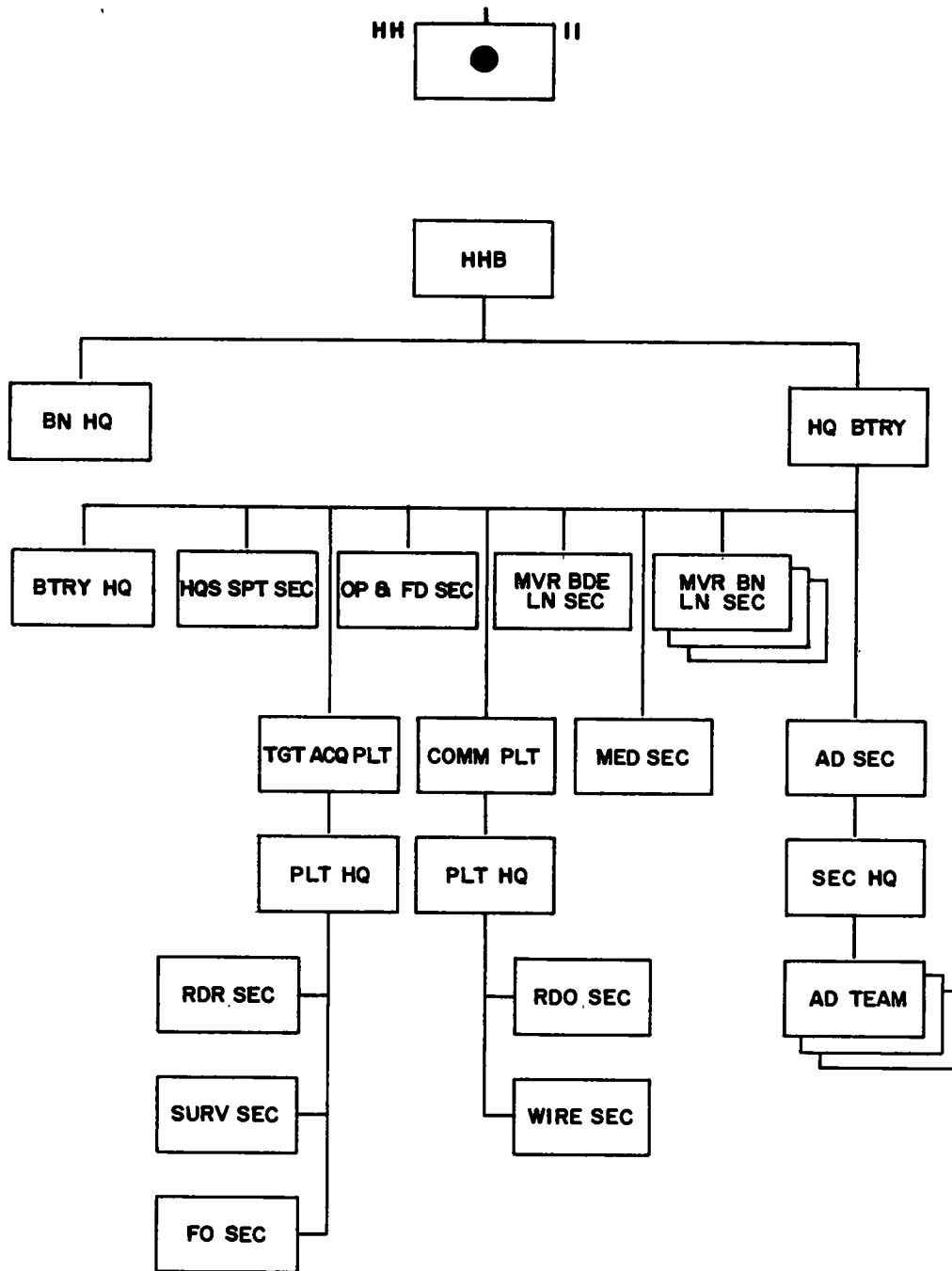


Figure 3-3. Organization of Headquarters and Headquarters Battery, Field Artillery Battalion (Direct Support).

cannon battalion are authorized a survey section rather than a target acquisition platoon because these type units normally are not assigned a mission of direct support. These units usually have their fires planned by an outside source.

g. The communications platoon consists of a platoon headquarters, a radio section, and a wire section. (The Pershing battalion includes a communications center and maintenance section.) This platoon installs, operates, and main-

tains the battalion communication system under the supervision of the communications-electronics staff officer. The platoon headquarters also operates the battalion message center.

h. The liaison section(s) performs liaison activities in support of the battalion mission as directed by the battalion commander.

i. The medical section establishes the battalion aid station. Under the supervision of the enlisted medical supervisor, the section provides for sick call, dispensary-type medical

ments for a hasty occupation. Prior to the start of the march, selected artillery personnel are furnished with maps and/or photographs that show possible locations of installations and the control measures in effect. Forward observers and fire support (liaison) officers are kept informed of this prior planning. Command liaison is established with the supported or reinforced unit.

4-20. Methods of Displacement

a. Direct Support Battalions.

(1) *General.* A direct support cannon battalion displaces when the battalion commander considers displacement necessary or when ordered by the force artillery commander. The displacement is dictated by the scheme of maneuver of the supported unit. Continuous fire support must be maintained. When displacement is necessary, the battalion commander coordinates the movement of the battalion with the actions of the supported unit and establishes the following:

- (a) The method of displacement.
- (b) The time displacement will begin.
- (c) The expected time of completion.
- (d) The location of the new position area.

(2) *Method.* A direct support battalion displaces by one of three methods. The method used depends on the time available, the scheme of maneuver of the supported unit, the availability of reinforcing field artillery, traffic conditions, and enemy activity. The three methods are discussed in (a) through (c) below:

(a) When reinforcing field artillery is available, or when arrangements can be made for other field artillery to assume the responsibility for the direct support fire missions, the battalion may displace as a unit.

(b) The battalion may displace by echelon. When the battalion displaces by echelon, one firing battery and a portion of the headquarters (service) elements move in one echelon and the remainder of the battalion in another echelon. The portion of the headquarters battery to displace with the forward echelon should be established by SOP. When the battalion displaces by echelon, close coordination between the commander and the executive is essential. The commander normally proceeds to (or remains at) the forward position area to supervise the occupation of position by the forward echelon. The executive normally remains with the battalion to supervise the movement from the old position. When the forward echelon has occupied its forward position and is ready to

resume its fire support, the commander calls the second echelon forward by means of a prearranged code. If the situation requires that the battalion commander remain with the supported commander, the executive supervises the entire displacement.

(c) The battalion may displace one battery at a time. The responsibilities listed in (b) above are applicable for this method. Advantages are that the unit is less vulnerable to attack and it is more difficult for the enemy to detect the movement. Disadvantages include the lack of control over displacing elements and the prolonged time required to move the entire battalion.

(3) *Command post.* There should be no interruption in the operation of the fire direction center when the battalion displaces by battery or by echelon. Continuous communication is maintained with the supported unit, the reinforcing field artillery, and higher field artillery headquarters. The fire direction center displaces by echelon so that continuous massed fires can be delivered. Every effort should be made to establish communication between the advance command post and the supported unit prior to the displacement of the battalion; however, the lack of communication should not delay displacement. The other elements of the command post should displace as prescribed in paragraphs 4-18 through 4-21.

(4) *Continuous Support.* Firing batteries in support of marching troops may be positioned and moved successively to forward positions (leapfrogged) in order to insure that some weapons are always in position and prepared to fire in support of the marching troops.

b. Reinforcing Battalion. A field artillery battalion with a mission of reinforcing the fires of another field artillery unit displaces upon request of the reinforced artillery unit or when ordered by the force field artillery headquarters. The reinforcing unit is responsible for notifying the next higher field artillery headquarters of the method of displacement, the time displacement is started, the time displacement is completed, and the location of the new position area.

c. General Support Battalions

(1) *General support mission.* A general support battalion displaces when ordered by the force field artillery headquarters. A general support battalion normally displaces as a unit; however, if the situation demands, the battalion may displace by any of the methods used by a direct support battalion. The battalion com-

mander continually studies the situation and makes recommendations to the higher field artillery commander concerning position areas, routes, and time of displacement.

(2) *General support reinforcing mission.* A field artillery battalion with a general support-reinforcing mission displaces when ordered by the force field artillery headquarters, or upon request of the reinforced field artillery unit, subject to the approval of the force field artillery commander. In making recommendations to the higher commander concerning position areas, routes, and time of displacement, the battalion commander considers all elements of his mission. General support-reinforcing missions may be assigned to other units by the higher field artillery commander while the displacement is in progress.

4-21. Execution of the Movement

a. Movement to the Position. The executive officer alerts the battalion for the move. When directed, he marches the elements to the designated release point.

b. Disposition of Elements During the March. The formation of a field artillery march column for movement varies with the type of unit, the mission, and the tactical situation.

Column formations for nonfiring units differ from those for firing units; column formations for artillery marching alone differ from those for artillery marching as part of a march column of a supported combat unit. The batteries should be disposed within the column to assist their entry into the new position areas with the one moving to the most distant position in the lead. The order of march should be such that no battery has to pass another in order to get to its new position area. There should be an adequate interval between serials of the convoy to achieve march dispersion and to eliminate the need to halt the entire convoy in the event of temporary delays of lead vehicles. The vehicles should be separated by a specified gap; 100 to 150 meters is recommended in order to minimize the effects of an enemy attack.

c. Field Artillery Support for the Column. When enemy ground action halts the column, or when there are other requirements for immediate fire support, the field artillery battalion commander directs the appropriate firing batteries to occupy hasty positions and prepare to fire. The remainder of the battalion remains with the column until otherwise directed. The field artillery commander must never allow his unit to be in a situation where his firing elements cannot support the maneuver units.

Section VI. RSOP BY THE FIELD ARTILLERY BATTERY (CANNON, MISSILE, ROCKET)

4-22. General

In this section, reconnaissance, selection, and occupation of position by the field artillery cannon (rocket, missile) battery will be discussed. For limitations and guidance relating to a specific weapon (Pershing, Sergeant, Lance, Honest John), see the appropriate field manual.

4-23. Battery Position Area

The *battery position area* includes the firing position, the battery CP, and all other battery installations. The *firing position* is the location occupied, or to be occupied, by the elements of the battery which are essential for firing a cannon, rocket, or missile.

4-24. Battery Commander's Party

a. The battery commander usually takes with him a small party to assist in the reconnaissance for battery positions and in planning the occupation. The composition and loading of the party is based on the initial tasks to be per-

formed, the number of vehicles permitted, and the time available.

b. The battery commander's task in getting his battery into position includes reconnaissance, selection of locations for battery installations, formulation of the occupation plan, issuance of orders to carry out the plan, and supervision of the execution of the plan. The area should be reconnoitered in detail, and security should be organized immediately. When time is a limiting factor, the battery commander should appoint members of the party to perform portions of the reconnaissance. The position for an installation may be selected by an appointed member of the party, but the final selection should be approved by the battery commander.

c. In cannon battalions, it may be desirable to include one cannon and crew in the party so that registration can be conducted and the firing chart started before arrival of the battery. This is particularly advantageous when the position is to be occupied at night and fires are to

be delivered before daylight and when there is no restriction on registration.

4-25. Planning the Reconnaissance

In planning a reconnaissance, the commander considers the following:

- a. Distance and route to the new area.
- b. Personnel available to conduct the reconnaissance and additional personnel required.
- c. Vehicles and equipment required for the reconnaissance and for early preparation of the position (wire, tentage, and fire direction equipment).
- d. Locations for the base piece for cannon units and each launcher for rocket and missile units, communications, ammunition, and POL facilities, and, when required, the nuclear weapon exclusion area.
- e. Time available.
- f. Tactical situation.
- g. Siting requirements for electronic security purposes.

4-26. Receipt of Order

- a. Before he leaves the battery to report to the battalion commander for the movement orders, the battery commander issues instructions covering operations during his absence. When the battery commander and his party arrive at the appointed place to meet the battalion commander, he halts his party, directs dispersion and concealment, and reports to the commander.
- b. The order for movement generally follows the sequence of other operation orders and includes the situation, time of movement, order of march, administrative arrangements, communications instructions during the march, and other appropriate or special instructions.

4-27. Executing the Reconnaissance

- a. After receiving the battalion movement order, the battery commander assembles his party, explains the situation, and proceeds to the new area. On the way, he notes the condition of the route and the number of route markers required. Included with the reconnaissance party will be personnel designated as a security element who will search the new position area as directed by the battery commander, or his designated representative—usually the first sergeant.
- b. When the battery commander arrives at the proposed battery position area with his party, he first determines the direction of fire on the ground; then he begins his reconnaissance to

select positions for battery installations. He should personally select the firing positions for the cannons. These positions are normally selected before any other part of the reconnaissance is performed.

c. The battery commander formulates his plan for the occupation as he performs his reconnaissance of the battery position area. After the reconnaissance and selection of positions is complete, he issues his orders for the occupation to the members of his party. The orders include—

(1) *General instructions.* The battery commander points out the location of the base piece or battery center, the direction of fire, and the locations of other elements of the battery. He gives instructions concerning the method of laying, ammunition storage, camouflage, routes into and out of the position, and tentative positions for perimeter defense weapons.

(2) *Communication instructions.* The battery commander points out the locations of the battery fire direction center, the command post, and the switchboard, and gives the necessary orders for the installation of the battery communication system. When necessary, he gives the communication chief detailed instructions concerning wire lines that must be laid outside the battery area, or any radio relay that must be established.

d. If the party consists of only the battery commander and the first sergeant, the battery commander usually shows the first sergeant the area to be occupied by battery headquarters. The first sergeant selects the locations for battery installations. Before leaving the area or issuing his orders, the battery commander receives the first sergeant's recommendations for the locations of battery installations and considers them for use in his plan.

e. After receiving the battery commander's instructions, the reconnaissance party rapidly prepares for the arrival of the battery. Cannon marking stakes are emplaced for individual piece alignment and positions, trail pits are dug when required, the aiming circle is set up and oriented, auxiliary aiming posts are set out when directed, and initial readings to the marking stakes are read and recorded. The wire net is installed, and guides are designated to direct each vehicle to its proper location upon arrival of the battery from the battalion release point.

4-28. Planning the Occupation of Position

- a. A guide should lead each vehicle to its parking place, especially during darkness. The

use of guides expedite the movement of vehicles from the column to their proper locations in the battery area without halting the column or delaying the prompt clearance of the road. If personnel are not available, or if the time of occupation is uncertain, locations may be marked by signs. If signs are used, security must be considered.

b. Separate entrance and exit routes are desirable. When available, established roads and trails should be used. The entrance to the bivouac area of the headquarters battery should be located so that battery vehicles do not pass through the command post (CP) area.

4-29. Displacement

a. The battery normally displaces on order of the battalion commander. When the battery moves as a part of the battalion, march column control is usually exercised by the battalion executive officer, who announces the start point (SP), the order of march, the rate of march, the distance between vehicles and units, and the release point (RP). Security measures to be taken on the march and upon arrival at the new position should be prescribed in the battery SOP.

b. At times, the battery commander may control the displacement; when he does, the essential elements for control of the column either must be a matter of SOP or must be announced.

c. The formation of the battery column may vary depending on the tactical situation and the position area to be occupied. In areas where the possibility of enemy attack is great, it may be advisable to disperse the cannons throughout the column. In most other situations, cannons and control vehicles should be placed well forward in the column to allow rapid entry into position. If possible, the commander should communicate to his executive officer the order of march to allow the section located farthest from the entrance to be positioned closest to the front of the column. The heaviest and slowest moving vehicle should be at the front of the column.

4-30. Occupation of Position (Day)

a. The actual occupation of the position must be thoroughly planned. The battery is extremely vulnerable during the occupation phase of an RSOP, therefore, this critical phase must be completed quickly.

b. When the battery arrives at the position area, all vehicles should be moved off the road

into the position area without halting the vehicles or closing the interval between vehicles. A guide should lead each vehicle to its predetermined location. As soon as the vehicles have been unloaded, they should be guided to the vehicle dispersal area or to another designated point. Ammunition vehicles are brought into the firing position only when ammunition is to be unloaded. Equipment should be unloaded quietly, quickly, and in an orderly manner. Noise should be held to an absolute minimum especially when commands for laying the battery and other instructions are being given in preparing the firing elements for delivery of fire.

4-31. Occupation of Position (Night)

a. Practice in night occupation of position is necessary to insure smooth operation. When time and the situation permit, the executive officer, accompanied by the chief of firing battery, the section chiefs, and the prime mover drivers should conduct a daylight reconnaissance. The reconnaissance should include the reconnaissance of the primary position area—including the routes into and out of the area—the alternate position area, and, if possible, the supplementary position area. The number and location of route markers required and their locations should be determined, and plans for security on the march and in position should be established. Night occupation of position is aided when adequate guides are made available. Guides should know the location of each installation in the area. At the conclusion of the reconnaissance, all key personnel, including drivers, should be briefed. During a reconnaissance prior to a night occupation, section marking stakes are employed to mark the position of the panoramic sight of each piece, of each instrument used in laying for direction, and of each aiming post. A marking stake is also employed for orienting the instrument that establishes direction. An identification tag, with lettering large enough to be read under blackout conditions, is attached to each stake. Night occupation is also aided by accomplishing certain other tasks during daylight. Some of these tasks are—

- (1) Emplacing auxiliary aiming posts.
- (2) Laying wire. (This may include laying two "hot-loops" prior to darkness—the firing battery "loop" and the perimeter "loop".)
- (3) Digging parapets, ammunition pits, trail pits, and foxholes.

(4) Preparing the command post and the battery fire direction center.

(5) Installing field expedient night lighting devices on auxiliary aiming posts.

b. When fire control instruments are used at night, it is often difficult to determine the correct reference light on which to sight. Blinking the light in accordance with prearranged signals or using colored lights aids in identification of the correct light. Only those lights actually in use should be on. *In laying the battery at night, the executive officer should keep his instrument sighted on one piece until it is completely laid.*

c. A marker equipped with a light should be emplaced to mark the end of the orienting line. This marker should be placed at a sufficient distance to eliminate the possibility of parallax in the aiming circle.

d. A night occupation requires more time than a daylight occupation; in addition, there is an even greater need for order and efficiency in a night occupation. No attempt should be made to hasten the operation until all personnel are capable of performing their duties in darkness. Particular care is necessary in guiding vehicles during blackout. Immediate corrective action must be taken to overcome violations of light and sound discipline.

e. Rapid displacements and night movements make it imperative that each unit prepare a loading plan for a uniform system of loading and unloading equipment. The weapon position should be so organized that each man knows where each item of equipment is located at all times.

f. Current night lighting devices on aiming circles and weapons sights provide adequate light for night operations.

g. Flashlights or expedients should be filtered to prevent a breach of light discipline. Current active and passive night vision devices should be used whenever possible. These aids assist in the handling of ammunition, servicing of weapons, maintenance of vehicles and equipment, installation of weapons, maintenance of communications, and the conduct of survey. Should daylight reconnaissance be impossible, maximum use of night vision devices is essential.

4-32. Occupation of Position Without Prior Reconnaissance

In some situations time is limited and a rapid occupation of position will be required. The procedures discussed in *a* through *g* below apply to a rapid occupation of position.

a. *Decentralization of Duties.* In a rapid occupation of position, decentralization of duties is essential. Personnel must be capable of performing their duties with little or no supervision to acquire proficiency. Personnel must continually practice the standard operating procedures involved in rapid occupation of position.

b. *Continuous Reconnaissance.* Normally, the battery commander precedes the battery. He constantly reconnoiters for possible position areas and reports the results to the battery executive officer. The executive officer notes and records the positions' locations and is prepared at all times to occupy the nearest suitable position in the event a fire mission is received.

c. *Codes and Signals.* The unit SOP should specify certain codes and signals which can be used to order the battery into position and to direct the occupation, thus eliminating lengthy orders and instructions.

d. *Occupation of Position.* When directed, the executive officer leads the battery into the nearest position. The unit SOP should provide a means of designating the position for the base piece and the location of the battery center or the general area for the sections so that each chief of section can select the specific location for his own piece. The executive officer points out the direction of fire. The prime mover or ammunition vehicle should remain by the piece. Ammunition should be taken directly from the vehicle until the vehicle can be unloaded. Tactical considerations may require firing prior to making sight tests and adjustments. In such cases, pieces must be boresighted when the opportunity presents itself during a lull in firing. (See the applicable field manual for methods of boresighting.)

e. *Laying the Battery.* The executive officer is responsible for laying the battery; however, the battery may be laid by the chief of firing battery or by another designated individual, using the methods prescribed in FM 6-40 and reference to the appropriate technical manual for rocket and missile equipment.

f. *Fire Direction Procedure.* During the march, the executive officer should trace the route on his map so that after occupation the battery position can be quickly determined by map inspection. As soon as the fire mission is received, initial firing data are determined and sent to the firing sections. Initially, the battery fire direction center should be set up close to the cannons so that fire commands can be relayed by voice. Fire direction center personnel should

be trained in emergency procedures to expedite the delivery of fires.

g. Organization and Improvement of Position. After the fire mission has been completed, continuous action is taken to organize and improve the position. Any inaccuracies in laying or boresighting are corrected. Communications within the battery are installed, and the normal installations are established.

4-33. Battery Operating Independently

a. General. When the cannon battery operates independently, as in support of stability operations, the battery commander, in addition to his normal duties, assumes the appropriate responsibilities of battalion commander.

b. Reconnaissance and Selection of Positions. When a battery is operating alone, the battery commander performs the initial reconnaissance for position areas. After an area is selected, the occupation procedures are similar to those of a battery operating as part of a battalion.

c. Observation. The observation functions performed by a battery operating alone are similar to those performed by a battery operating as part of a battalion. In addition, batteries that are authorized forward observer sections will man observation posts as requested.

d. Liaison. When a battery is employed independently, liaison is performed as required by the tactical mission.

e. Survey. Personnel required to accomplish the necessary survey may be attached from the battalion survey section.

f. Communications. The communications section chief supervises the installation and operation of all wire and radio communication facilities. His duties are similar to those of the battalion communication officer (FM 6-10). Communication with the supported or reinforced unit is of primary importance and must be maintained.

g. Fire Direction. The battery assistant executive officer supervises the battery fire direction center. The fire direction center is organized so that multiple missions can be fired by the battery. All radiotelephone operators should be able to act as recorders, and FDC personnel should be trained to act as computers and chart operators. If the battery displaces by echelon, it will be necessary to set up an FDC in the new area and to maintain the FDC in the old area. It may be necessary for the battalion to augment the firing battery with additional fire direction personnel.

h. Supply and Ammunition. When the battery is operating independently, the battery supply officer performs the supply functions normally performed at battalion. The battery ammunition section may be supplemented by part of the battalion ammunition train. An officer or the chief of the ammunition section will assume the duties of the train commander.

Section VII. RSOP BY THE HEADQUARTERS AND HEADQUARTERS (AND SERVICE) BATTERY

4-34. General

a. In this section, reconnaissance, selection, and occupation of position within the command post area and the various installations that are included in the headquarters, headquarters (and service) battery will be discussed.

b. The latitude allowed the headquarters battery commander in positioning the elements of his battery and the extent to which he can develop an SOP depend on the following:

(1) *Echelon involved.* At battalion level, the staff sections have few subdivisions that require locations; for example, all S2 functions are performed in one place.

(2) *Policy of the commander.* Normally, the battalion commander directs the headquarters battery commander to organize the CP area. The headquarters battery commander may be required to obtain approval of his plan prior to

the organization, or he may have complete authority. The initial reconnaissance may be made by the communications-electronics officer, who will select tentative locations for the various installations. Both the communication officer and the headquarters battery commander must know the desires of the commander.

(3) *Staff section requirements.* The headquarters battery commander and the communications-electronics officer should know the type of location required by each element to insure efficient operation and should understand the relationship among the various elements of the CP.

c. After an SOP has been developed, the same general layout of the CP should be used in each position. Using the same arrangements of installations results in greater efficiency of operation.

4-35. Receipt of Orders

The headquarters battery commander receives his orders at the same time that orders are issued to the cannon (rocket, missile) battery commanders.

4-36. Characteristics of Position Areas

In planning the organization of the position area, the headquarters battery commander and the communication officer consider the following requirements:

a. Space. Except as varied by the policies of the commander, the space requirements for the CP may depend on the organization of the fire direction center (FDC), and on the number of additional personnel that must be accommodated. If specialist teams are attached or if separate locations are required for some installations and activities, a larger area will be necessary. In evaluating the space available, the battery commander and the communications-electronics officer consider the location requirements for—

- (1) The operations and fire direction section.
- (2) The message center.
- (3) The switchboard.
- (4) The radio panel station.
- (5) A vehicle dispersal area near the message center for visitor traffic.
- (6) Battalion supply, maintenance, and ammunition (if applicable).
- (7) Headquarters battery elements.
- (8) Security and perimeter defense elements.
- (9) The battalion headquarters support section.
- (10) Medical section.

b. Cover and Concealment. The area should have sufficient defilade to minimize visual or radar observations by the enemy. Heavily wooded areas provide concealment, but good locations for the elements of radio and panel station may not be available. In areas of sparse or scattered vegetation, camouflage is necessary. In open terrain such as desert, elements in the CP area should be dispersed in such a manner as to conceal the installation.

c. Security. The area should be such that the defense can be organized with the weapons and personnel available. If possible, the command post should be located to derive some protection from the security measures of the cannon, rocket, or missile batteries. Arrangements

should be made for mutual protection with adjacent units.

d. Headquarters (Service) Battery Area. The location of the CP, the tactical situation, security, supply, sanitation, and accessibility govern the selection of the headquarters (service) battery area. The area should have good drainage and concealment and should offer adequate space for a vehicle dispersal area and maintenance facilities. The elements of the battery should be grouped together for administration and control.

4-37. Executing the Reconnaissance

The battery commander's party may be divided into two groups, one to perform the reconnaissance for the CP area and the other to reconnoiter the area for the headquarters (service) battery elements. Normally, only the position for one major element need be designated. The other elements can then be located according to their functional relationship with the major element. This procedure should be included in the battery SOP.

4-38. Planning the Occupation

a. General. After selecting locations for the various elements of the CP and verifying the plan for organization of the area, the headquarters battery commander and the communication officer plan the occupation.

b. Equipment. It may be desirable to move and install a certain amount of equipment prior to the occupation. Such equipment will consist primarily of facilities for shelter and local communication equipment. For example, the fire direction center should be able to move into the area, occupy the position, and begin operations without delay.

c. Route Markers. When the headquarters and the headquarters battery move as part of the same march unit, as they frequently do, route markers are usually provided for in the orders of the battalion commander. When the CP element displaces alone, the headquarters battery commander is responsible for providing route markers.

d. Coordination. Because all headquarters staff elements are affected by displacement of the headquarters battery, the general plans for movement to, and occupation of, the new area should be coordinated in advance with the battalion executive officer.

4-39. Displacement of the Battery

a. General. The method and details of displacement are prescribed by the higher com-

mander either in an SOP or in specific orders for each movement.

b. CP Displacement. The battery commander should, at all times, know the capabilities of the headquarters battery to move the CP. If for any reason the command post cannot be moved in one echelon, he should inform the battalion executive officer and recommend a method of displacement. When a move is imminent, he should be prepared to make recommendations before the commander's plans are made. Therefore, he must be kept informed of all contemplated movements. When the CP displaces by echelon, each staff officer is responsible for the section under his control. He informs the battery commander as to the number of personnel, the amount of equipment, and the persons in charge of the subdivisions in each echelon.

c. RSOP. Reconnaissance, selection, and occupation during the displacement is again accomplished as described in preceding paragraphs of this chapter.

d. Movement by Echelon.

(1) *Transportation.* Certain vehicles should be designated to displace and remain with each echelon. These are primarily the command administrative vehicles needed at each location. Other vehicles may remain at the advance CP or may return to assist in the displacement of the rear echelon.

(2) *Mess.* Provisions must be made for messing the personnel of each echelon. When the time interval between the displacement of echelons is short, emergency rations may be issued

to the echelon containing the fewest personnel. When the time interval is more than 24 hours, provision should be made to provide personnel in both echelons with hot food.

4-40. Occupation of Position

a. The battery commander may issue his orders for the occupation to the members of his reconnaissance party, or he may return to the headquarters battery before issuing his orders. When it is necessary for him to return to the battery, he may leave the first sergeant in the new area. On returning to the battalion headquarters from the reconnaissance, the battery commander reports the results of his reconnaissance and gives his plan for the movement and occupation to either the battalion executive officer or the staff officer in charge. The executive officer or the staff officer in charge issues instructions to the staff sections in conformance with the approved plan. The battery commander then assembles the key personnel of the battery and issues his orders.

b. The battery commander may assemble certain personnel from the staff sections and headquarters battery and proceed to the new area in advance of the main column. This party should include route markers and sufficient personnel to prepare the new area for occupation. A staff officer may be designated by the battalion commander to lead the main column, or the battery commander may assign this duty to the headquarters battery executive officer.

Section VIII. RSOP BY THE SERVICE BATTERY

4-41. General

a. The battalion commander will usually select the general area for the location of the service battery. The service battery commander may or may not accompany the battalion commander on the reconnaissance; however, he will make his own detailed reconnaissance in the general area designated by the battalion commander. The essential requirement for a service battery position is that it must permit the battery to perform its support mission for the battalion.

b. The guidance stated in section VII is applicable to an RSOP by the service battery.

4-42. Reconnaissance Party

The service battery commander normally will have sufficient time to make a deliberate recon-

naissance of the position area. The reconnaissance party should be composed of the personnel necessary to assist the battery commander in selecting locations for installations, in organizing the area before occupation, and in providing local security prior to and during the occupation of the position.

4-43. Occupation of Position

a. The service battery will occupy the new position at the times specified by either the battalion or battery commander. The battery may displace by echelon or as a unit. If the battery moves as a unit, it has a greater capability for local defense against ground attack. The procedures for occupation of position discussed in foregoing sections also apply to occupation of position by a service battery; however,

the large number of vehicles in a service battery creates an additional requirement for detailed planning.

b. The service battery of a separate field artillery battalion will move as directed by the battalion commander.



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installation in which the normal S2/S3 operations are performed. It is collocated with the FDC.

e. Message Center. The message center should be located at the entrance to the command post area so that it will be readily accessible to incoming messengers and visitors. Adequate space for vehicle dispersal should be available.

f. Switchboard. The battalion switchboard should be located so as to facilitate the installation of wire circuits. It should be located on the perimeter of the command post area in a covered and protected area away from noise and interference. The importance of the switchboard renders it a particular target for infiltrating enemy; consequently, it must be well protected.

g. Radio and Panel Station. The radio and panel station consists of the communication facilities for the command and fire direction net, a panel display area, and a message pickup field for either fixed-wing aircraft or helicopters. The radio and panel station should be located some distance from other installations, but still within view and protection of the defensive perimeter. The location should provide concealment for radio sets, vehicles, and personnel. Antennas should be dispersed and placed so that the maximum amount of electromagnetic radiation emitted in the direction of the enemy is absorbed by terrain and foliage. There should be sufficient open terrain to permit the display of panels and the operation of the pickup field. As the organization of the command post progresses, remote control should be established

from the radio sets to the S2/S3 operations center.

h. Aid Station. The battalion aid station should be located near a road or trail to assist in the rapid reception and evacuation of patients.

5-4. The Headquarters Battery Area

The headquarters battery area is organized to give maximum support to the command post. In organizing the area, the battery commander considers the following requirements:

a. All personnel assigned to the same CP element should be quartered together. The staff officer who supervises the element, in cooperation with the battery commander, usually assigns personnel to shifts for 24-hour operation. The battery commander is responsible for insuring that the assigned personnel are available for duty at the required times.

b. A route from the dismount point to the vehicle dispersal area should be prescribed as a security measure and also to avoid confusion. It is desirable to install a local telephone circuit from the switchboard to a control point within the vehicle dispersal area.

c. The mess facilities should be located in the headquarters battery area and should be easily accessible to the CP area. The facilities should be located near a road to facilitate supply and resupply.

d. The defense of the headquarters battery and CP areas is generally the same as that of cannon, rocket, and missile batteries (chap 6). The security of the headquarters battery is integrated with that of the CP.

Section II. THE FIELD ARTILLERY CANNON BATTERY

5-5. General

Organization of a field artillery cannon battery position consists of the operations necessary for delivery of fire. The cannons must be deployed to provide fire support for the supported force at all times. Organization of the position area is a continuous process that begins when the position area is selected and ends when the area is vacated. Organization of a position is divided into two phases—the operations necessary for immediate and continuous delivery of fire, and the operations necessary to improve the position. The first phase often can be accomplished during the reconnaissance, selection, and occupation of position. When the situation permits, the battery commander should infiltrate personnel into the battery position area to

accomplish as much of the organization as possible before the arrival of the main body of the battery. This may include the erection of camouflage nets, the installation of wire nets, improvement of routes, organization of local security posts, employment of warning devices, and partial digging in. After the battery has occupied the position area, improvement of the area continues as firing permits. Figure 5-3 shows a type position area for a field artillery cannon battery.

5-6. Planning

The battery commander should plan the organization of the battery position area as soon as possible after the area has been selected. In planning the organization, he must consider the

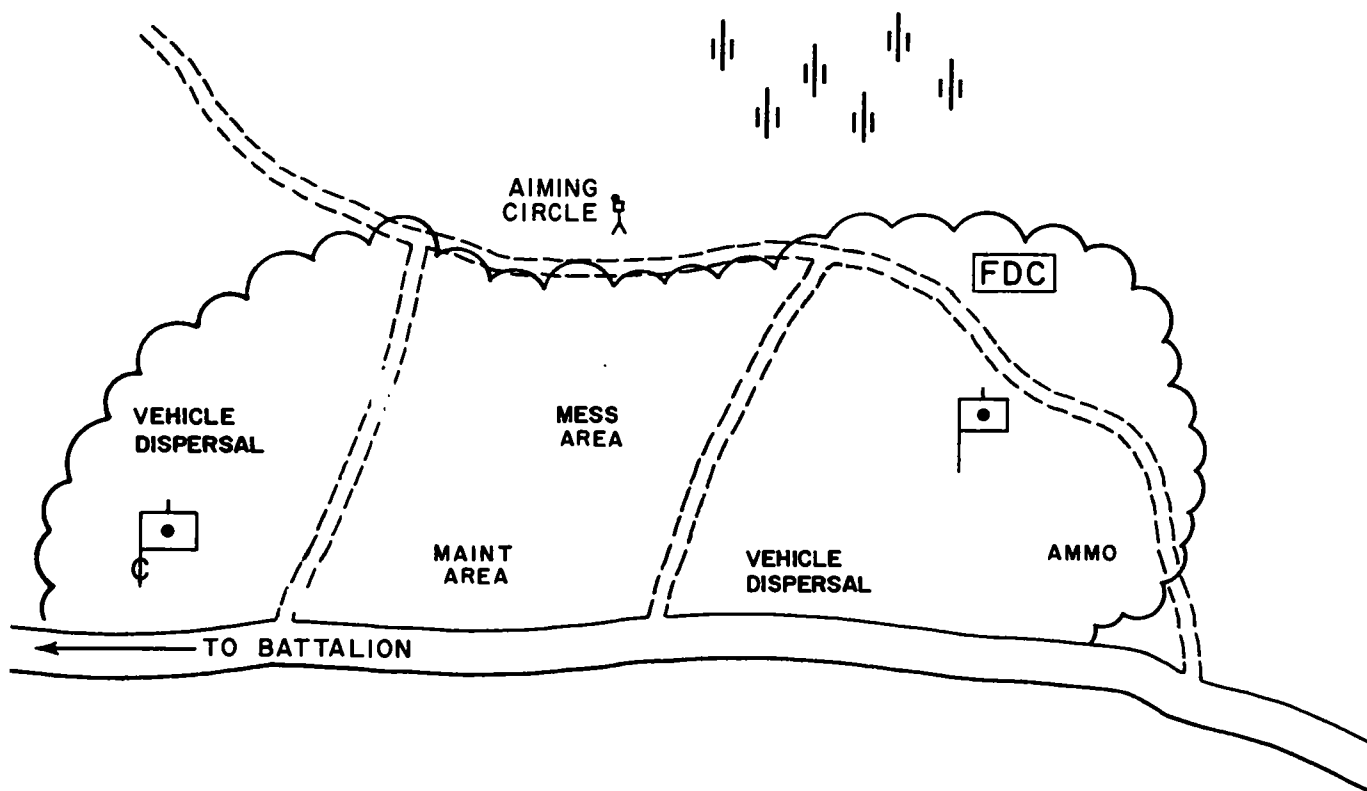


Figure 5-3. A type position area for a field artillery cannon battery.

unit's ability to execute its primary mission, the defense of the area, the effect that changing weather conditions will have on the area, concealment and cover, and, in stability operations, the possibility of insurgent activity in the area. Maximum preparation prior to occupation will assist the commander in organizing the position.

5-7. Priorities

The following order of priority for accomplishing the tasks associated with the organization and improvement of the position area may be established:

- a. Preparation to deliver fires.
- b. Establishment of a perimeter defense.
- c. Protection of personnel by digging trenches and foxholes.
- d. Protection of ammunition.
- e. Camouflage.
- f. Preparation of emplacements for the cannons and other weapons.
- g. Preparation of alternate and supplementary positions.
- h. Preparation of dummy positions (when authorized by the higher commander).

5-8. Installations

The installations within the cannon battery po-

sition area include the firing position, the command and service area, and the perimeter defense. The arrangement of the different installations of the battery depends on the available fields of fire, the possibilities for defilade and concealment, and the layout of the firing position. Wide variations may be necessary to fit the existing terrain. For example, in the organization of a position area in the desert, greater emphasis is placed on dispersion and camouflage. The organization of a position area in or near a village will differ greatly from that of a position area in an unpopulated area.

5-9. Firing Position of the Cannon Battery

a. *General.* The firing position includes the installations around which the entire battery position area is organized; i.e., the emplaced cannons, the aiming circle(s), the ammunition dump, and the battery fire direction center. Selecting the locations for and preparing these installations have priority over all other tasks.

b. *Cannon Positions.* The primary consideration in selecting the locations for the cannons is the capability of firing effectively in support of the supported force. Some of the pieces may be moved from their initial positions in order to achieve more effective organization for prolonged occupation. Some of the factors to be

considered in organizing the firing position are as follows:

(1) *Terrain.* When possible, a position should permit an all-round (6,400-mil) firing capability. A position should provide defilade without creating an excessive minimum elevation. If weapons are positioned too close to a high terrain mask, they cannot be used for direct fire against enemy ground forces attacking the battery position area. Although most cannons are capable of firing high-angle fire, high-angle fire may be undesirable or impossible—undesirable because of the time required for the delivery of high-angle fire at the close ranges and impossible because the range is too short. Terrain features to the flanks and rear of the battery position should also be considered. For instance, hills, cliffs, and high trees to the flanks or rear may adversely affect an otherwise excellent firing position. Trafficability of the terrain must be considered. Entrance and exit routes should be available.

(2) *Tactics and capability of the enemy.* The tactics and capability of the enemy and the influence of terrain are interrelated. For example, when the enemy has air superiority or is active in counterbattery fire, or when the area is barren desert, the weapons and other battery installations should be widely dispersed. When the battery is operating in mountains or heavily wooded areas, when friendly forces have air superiority, or when the battery is harassed by guerrilla or infiltration tactics, the battery installations will usually be kept in a compact, easily defended area, away from woods which might offer the enemy concealed routes of approach.

(3) *Formation of the cannons.* The formation of the cannons in the firing position is influenced by the terrain and by the tactics and capability of the enemy. Individual weapon positions are selected to obtain maximum cover, concealment, and dispersion consistent with control and the ability to deliver all-round fire. A compact firing position facilitates control by the executive officer and is easier to defend during ground attack. However, a compact position may be vulnerable to air attack and to counterbattery fire. A straight-line formation of cannons presents an easy target for strafing or low-level bombing attacks and should be avoided. Staggering the cannons helps to conceal the position and provides better possibilities for firing to the flanks and rear. Three suitable cannon formations are the triangular, hexagonal, and star formations. A good disper-

sion pattern is maintained in each formation regardless of the direction of fire. Generally, battery fronts, on line or staggered formations for light and medium cannons, are 150 and 250 meters, respectively; for heavy cannons, 240 and 285 meters. For other formations, appropriate intervals apply. If the frontages are exceeded, either the sheaf will be so wide that it will be less effective, or additional corrections may be required to close the sheaf on each fire mission. Pieces are numbered from right to left and from front to rear.

(4) *Preparation of emplacements.* The purpose of a cannon emplacement is to provide cover for the cannon and its crew and its ammunition. Improvement of the cannon emplacements continues throughout the occupation of position. For a detailed discussion of emplacements, see FM 5-15.

(5) *Preparation for a 6,400-mil capability.*

(a) In attempting to secure a 6,400-mil firing capability for the battery, the battery commander must not lose sight of the primary direction of fire and the mission. For instance, emplacing the weapons in a circular formation may provide the best all-round firing capability, but the effect of battery volleys will be considerably reduced by the irregular distribution of fire. Application of position corrections to each fire mission is not practicable. Therefore, weapons should be emplaced so that maximum effective fire can be delivered in the primary direction of fire. When it is necessary to shift fire to a direction that causes the battery front to become significantly less than the battery depth, position corrections should be applied.

(b) Actions that can be taken to provide a 6,400-mil capability without reducing the unit's ability to deliver fire with maximum effectiveness in the primary direction of fire are as follows:

1. A second pair of aiming posts and/or an additional collimator (auxiliary) for each piece can be emplaced in a direction 3,200 mils opposite that of the initial pair of aiming posts or the collimator. The pieces will then have an aiming point for any direction of fire.

2. When large shifts in direction of fire are required, the new azimuth of fire is announced to the pieces. Diagrams drawn on cannon shields or azimuth stakes may prove useful for re-orientation purposes.

3. Each cannon crew can place a stake beneath the sight of the weapon to minimize the aiming point or collimator displacement that

results from large shifts in direction of fire. The sight of the weapon must be kept over the stake when the trails of a towed weapon are shifted.

4. Gun emplacements can be constructed to provide an all-round firing capability in the delivery of fire.

5. Replotting the firing battery on the firing chart, rotating the firing chart, and renumbering grid squares permits use of the same firing chart throughout a 6,400-mil sector of fire, thereby saving valuable time.

6. Circular, rather than cone-shaped, fire capabilities overlays can be used for fire planning.

c. Aiming Circle Location.

(1) The aiming circle should be set up at a point from which all the pieces may be seen and easily laid. The location should be away from all magnetic attractions. A stake should be driven into the ground to mark the location of the aiming circle.

(2) The aiming circle must be set up no closer to the following objects than the distances indicated:

	Meters
High-tension power lines/electronic equipment	150
Railroad tracks and very heavy weapons -----	75
Medium and heavy weapons and armored vehicles -----	60
Light weapons, unarmored vehicles, and telephone wires -----	40
Barbed wire -----	10

(3) Steel helmets, small arms, steelrimmed eyeglasses, rings, pencils, and other metallic objects which affect the needle must be kept away from the instrument.

d. Ammunition Dump. The ammunition dump (when authorized) should be located to the flank of the firing position and at least 100 meters from other installations. Dispersion, concealment, and cover are essential for passive protection. Defilade and good drainage are desirable. The various ammunition components, such as fuzes, primers, powder charge increments, and projectiles, should be stacked separately and by lot (TM 9-1300-206).

e. The Battery Fire Direction Center. The battery FDC normally includes the executive officer or his representative (the assistant executive officer or the chief of the firing battery), the computer, the recorder, chart operators, and radiotelephone operators. Communications include radio and wire contact with the battalion FDC, wire lines through a switching kit to each cannon, and, as time permits, a wire line to the battery switchboard. The executive officer sta-

tions himself where he can most effectively control the firing battery. By using a telephone head and chest set, he can plug into any cannon section phone or into the switching kit. The physical location of the battery FDC can and should be varied to meet changing conditions. The location should provide defense against attack, particularly in stability type operations, and should be adjacent to the rear of the battery center for easier access by the battery executive during the firing operations.

f. Exclusion Area. The nuclear weapon exclusion area should be located as near the center of the battery position area as possible, consistent with the availability of natural concealment and access routes.

g. Safety. Chiefs of cannon sections are responsible for the accurate setting of firing data on their cannons. During training, safety officers will assume the duties outlined in FM 6-40.

5-10. Battery Command Post

The battery command post is usually located in the general vicinity of the battery fire direction center. It should be connected with the battery wire system. Defilade and concealment are desirable.

5-11. Switchboard and Wire Lines

The battery switchboard should be located to the flank of the battery near the point of exit of the exterior wire lines. It should be dug in, connected into the battery wire system, should use available cover and concealment, and should be free of noise. When time permits, wire lines leading from the switchboard and within the firing position should be buried, or overheaded, particularly when the firing position may be subjected to enemy artillery fire. Alternate wire lines to all positions are desirable and will be established when time permits.

5-12. Service Area

The service area contains the vehicle dispersal area and the battery mess. Since these installations are not directly related to the delivery of fire, they are located away from the firing position.

a. Mess. The battery mess should be in the battery position area when the situation permits. The mess should be placed in a defiladed and concealed location that is accessible by road. The area should have good drainage,

and the soil conditions should permit absorption of seepage from sumps and garbage pits.

b. *Vehicle Dispersal Area.* The vehicle dispersal area should be located to the flank or rear of the cannons in an area that is accessible; that has firm ground, good drainage, cover, and concealment; and that provides room for dispersion of vehicles. When cover is not available, vehicles should be separated by a minimum distance of 50 meters. All vehicles that are not required at the various battery installations should be parked in the vehicle dispersal area.

5-13. Survey Operations

The purpose of field artillery survey operations normally performed by personnel of the headquarters battery is to determine the horizontal and vertical locations of points to be used in computing firing data and to provide a means for orienting weapons, instruments, and radar. Survey control in the position area of each cannon battery is the basis of accurate firing data. The position area survey requirements are identical for all field artillery cannon bat-

teries. The survey party establishes an orienting line of known direction in the position areas of all batteries, computes an orienting angle for each battery unless otherwise directed by the unit SOP, and gives the information to the battery executive officer. Additional survey tasks may be prescribed for the survey party by the reconnaissance and survey officer. For a detailed discussion of survey operations, see FM 6-2.

5-14. Perimeter Defense

The perimeter defense includes the positions for machineguns, antitank weapons, air defense weapons, and other crew-served weapons and the positions for sentinels, outposts, anti-intrusion devices, warning systems, and obstacles. The perimeter defense is established to provide a flexible, all-round defense of the position area. Perimeter defense is particularly important during stability operations in which guerrilla attacks are a continuing threat. A detailed discussion of the defense of the battery position area is presented in chapter 6.

Section III. THE FIELD ARTILLERY MISSILE (ROCKET) BATTERY

5-15. General

Organization of the position area of a field artillery missile (rocket) battery consists of the operations necessary for delivery of fire. The priority operations include checking out the missile (rocket) and the warhead section, assembling the missile (rocket), loading the missile (rocket), and laying the launcher.

5-16. Firing Elements

The locations of the missile (rocket) battery firing elements are determined by the mission requirement. Specific guidance regarding the locations of the various rocket and missile (rocket) firing systems is contained in the applicable field manuals, including FM 6-39, FM 6-37, FM 6-42, and FM 6-61.

Section IV. THE SERVICE BATTERY

5-17. General

The service battery area is organized to permit efficient performance of all battalion and battery functions and, at the same time, to provide defense against all types of attack. In organizing the position area, the battery commander should take advantage of defiladed areas, cover and concealment, and existing road networks.

5-18. Routes

Organization of the position area should permit easy access to all installations. Routes to the battalion supply and maintenance installations and to the battalion ammunition dump should not pass through the bivouac area. The position area should have separate entrance and exit routes which should be well concealed from enemy observation.

5-19. Dispersion

The installations of the service battery must be sufficiently dispersed to provide a reasonable degree of passive defense against enemy air or artillery attack. On the other hand, the defense of a widely dispersed service battery against ground attack is difficult because of the smaller number of personnel organic to the service battery. The principal considerations governing dispersion are the mission, the terrain, the capabilities of the enemy, and the proximity of friendly troops in the area.

5-20. Installations

The battery headquarters area should be located so that traffic to the battalion installations will not be routed through it. The locations of battery installations within the headquarters and

within the bivouac area are generally the same as for other types of batteries. The elements of the service battery are located as follows:

a. The battalion supply section should be conveniently located near an entrance to the position area. The area should be well drained and should permit concealment of bulk supplies. The elements of the section are organized as directed by the S4 or by the general supply warrant officer. A separate protected facility may be used for a ration breakdown and storage facility.

b. The location for the battalion maintenance section should provide sufficient room for dispersion of vehicles, firm ground, cover, concealment, and a water source. It should include a relatively flat location for maintenance operations. Sumps should be prepared for disposal of waste lubricants and trash.

c. The ammunition train dispersal area normally is established within the service battery position area. It should be located so that enemy fire directed against the area should not endanger the remainder of the battery. The area should be well drained; should provide cover, concealment, and room for dispersion; and should be readily accessible to ammunition vehicles.

5-21. Security

The principles and procedures applicable to the defense of the battery position area (chap 6) are applicable to the service battery. Because the number of personnel in the service battery is limited and because the battery has no cannons for direct fire, the defense system of the service battery should be integrated with the defense systems of other units in the area whenever possible.

5-22. Communications

The service battery should have a direct wire line to the battalion switchboard. In some situations, the service battery may be so distant from the battalion that direct wire communication will be impracticable. In such situations, the battery will lay a line to the nearest unit having access to trunklines connecting with the battalion wire system and request that the line be connected to the unit's switchboard. Local lines within the service battery position area are established as directed by the battery commander. In addition to wire communication, the battery commander has a radio set for operation in the battalion command/fire direction net.

areas which might provide concealment or cover for enemy forces should be actively patrolled or kept under surveillance. Patrols should cover specific areas but should not repeatedly follow identical routes or schedules. Patrols should make personal contact with as many of the outposts along their route as possible without exposing either themselves or the outposts. Visual contact must be made with those outposts in exposed locations. Patrols should also maintain contact with adjacent units. When patrols locate enemy forces, they should not engage the enemy in a firefight unless absolutely necessary, but should keep the enemy forces under surveillance and notify the battery. Immediately before darkness, and immediately after dawn, patrolling should be intensified. Before outposts are reoccupied after dawn, the routes and positions should be checked by patrols for possible ambushes. Patrol activities are coordinated with other units in the area to prevent duplication of effort and the possibility of patrols firing at one another.

6-7. Communications

Communications between the outposts, the listening posts, and the battery should be integrated into the battery switchboard by placing all the installations on one continuous wire circuit (hot loop). This system permits one outpost to alert the other outposts, the listening posts, and the battery simultaneously. Alternate methods, such as sound devices, pyrotechnics, and runners, should be ready for use. When time permits, the wire lines should be buried and alternate lines provided to all positions. Radio communication normally is used by patrols and may supplement the wire communication to the outposts and listening posts. Patrol leaders must be well trained in communications security techniques to protect against enemy attempts to disrupt or confuse communications with the base camp.

6-8. Illumination

a. Illuminating devices and pyrotechnics may be used advantageously when the battery is under attack at night. Plans for the use of illumination must be coordinated with higher headquarters. Illuminating shells, when used, should be detonated well behind the enemy force in order to silhouette the enemy and, at the same time, place minimum light on the defensive battery. Care must be taken to avoid disclosing friendly locations not under attack.

b. The use of illumination should be secondary to the use of night surveillance devices. Illumination should be employed only when necessary to repel a significant probe or attack (FM 6-40 and FM 20-60).

6-9. Obstacles

Obstacles are used to reinforce the outpost system and the main perimeter defense. Artificial obstacles may be used to supplement natural obstacles. Both must be covered by observation and fire to be effective. Mines, flame field expedients, trip flares, and barbed wire serve both as obstacles and as part of the warning system. Mines and boobytraps, other than those employed in protective minefields, may be used only when specifically authorized by higher headquarters. Unit minefields must be properly marked, recorded, and reported. The report must be submitted to higher headquarters and to friendly units in the vicinity and must show the locations of the mines and safety lanes (FM 31-10). Guards must be posted to warn friendly personnel. Concertina or double-apron barbed wire is used to cover avenues of approach and to protect the main perimeter defense. Barbed wire should be located far enough from protected installations to keep them beyond hand grenade range, yet close enough to insure day and night observation and coverage by fire. Trip flares and perforated tin cans containing pebbles may be attached to the barbed wire as alarm devices.

6-10. Camouflage

The purpose of camouflage is to conceal the location of the position of the battery or to mislead the enemy regarding its strength, type, and intentions. The three principles of concealment are siting, camouflage discipline, and camouflage construction. In organizing his battery position area, the battery commander must devise a camouflage plan to take advantage of natural concealment and to supplement the natural means by skillfully applying the principles of concealment. Camouflage is a passive measure for defense of the position area and is especially important when the enemy has air superiority. For a detailed discussion of camouflage, see FM 5-20 and TM 5-200.

6-11. Deception

Deception measures, such as those described in this paragraph, will not be employed without authorization by the appropriate commander.

Dummy positions must be employed to deceive the enemy regarding the true locations of units. One or more field artillery weapons may temporarily occupy positions, fire for short periods of time, and return to their primary positions.

Roving guns may be used for harassing and interdiction missions. Registrations may be conducted from supplementary positions. For a detailed discussion of deception measures, see FM 6-20 (chap 5).

Section III. DEFENSIVE PREPARATIONS

6-12. General Defensive Measures

a. Each battery should prepare an SOP for the conduct of its defense. The SOP should conform to the defense plan of the parent battalion. Procedures which apply to the defense of all types of batteries include the following:

(1) Each machinegun, air defense weapon, and antitank weapon must be protected by rifle fire.

(2) Sectors of fire are assigned to all crew-served weapons, and stakes are set to indicate the lateral limits of the sectors.

(3) Indiscriminate firing of weapons is prohibited.

(4) Friendly forces which may be affected must be warned of planned direct artillery fire or long-range automatic weapons fire.

(5) Periodic reports should be made by all outposts. The reports should be staggered in time so as to preclude a report pattern.

(6) Unmistakable warning signals must be used (app C).

(7) Personnel and weapons must not be silhouetted against the sky.

(8) Dawn and dusk patrols should cover the immediate terrain surrounding the battery.

(9) Barriers within the position area may be used to prevent the enemy forces that penetrate the perimeter from having direct access to all installations simultaneously.

b. The following precautions must be observed during operations at night and under conditions of limited visibility:

(1) Reserve small-arms ammunition and grenades for night use must be distributed prior to darkness. Grenade boxes must be opened, and ammunition must be placed in clips and magazines.

(2) When trip flares, flame field expedients, boobytraps, and mines are to be used, they must be armed prior to darkness.

(3) Strict adherence to the correct use of the sign and countersign is required.

(4) Outposts should be pulled in close to the perimeter, and listening posts should be established along avenues of approach. Night vision equipment and ground sensors should be employed when available.

(5) Movement within the defended area must be minimized.

(6) A definable point on the perimeter should be designated as an exit and entrance point.

(7) Firing of automatic weapons should be carefully controlled to prevent unnecessary disclosure of their locations.

(8) Light and noise discipline must be maintained.

(9) Strict compliance with chemical, biological, and nuclear attack detection and alarm procedures is required on a continuing basis.

(10) Warning devices and systems should be employed near avenues of approach with monitors located as required by unit SOP.

c. In addition to the main mission of providing prompt fire support, defense positions should be prepared and improved as time permits. The positions should be destroyed upon departure, since the enemy may occupy abandoned positions and attempt to prevent friendly reoccupation.

6-13. Perimeter Sketch

When a battery is functioning as part of a battalion, the battery commander forwards an accurate sketch of the battery defenses to the battalion executive officer. His sketch is consolidated with those of the other batteries, and an overall plan for the defense of the battalion is devised. The information to be included on the sketch is prescribed in the battalion SOP. The sketch should include, in addition to weapon locations, the sites of the battery fire direction center, the command post (CP), the switchboard, and other installations which might be sought by messengers or communication personnel. The technique of drawing a perimeter sketch (fig 6-1) is as follows:

a. On a 1:50,000 map, place tick marks at 200-meter intervals along the sides of the grid square(s) containing the battery position. Connect the tick marks to form a grid.

b. Attach overlay paper to a grid sheet and write coordinates in the margin.

c. Reproduce the detail from each 200-meter square in the large squares of the grid sheet.

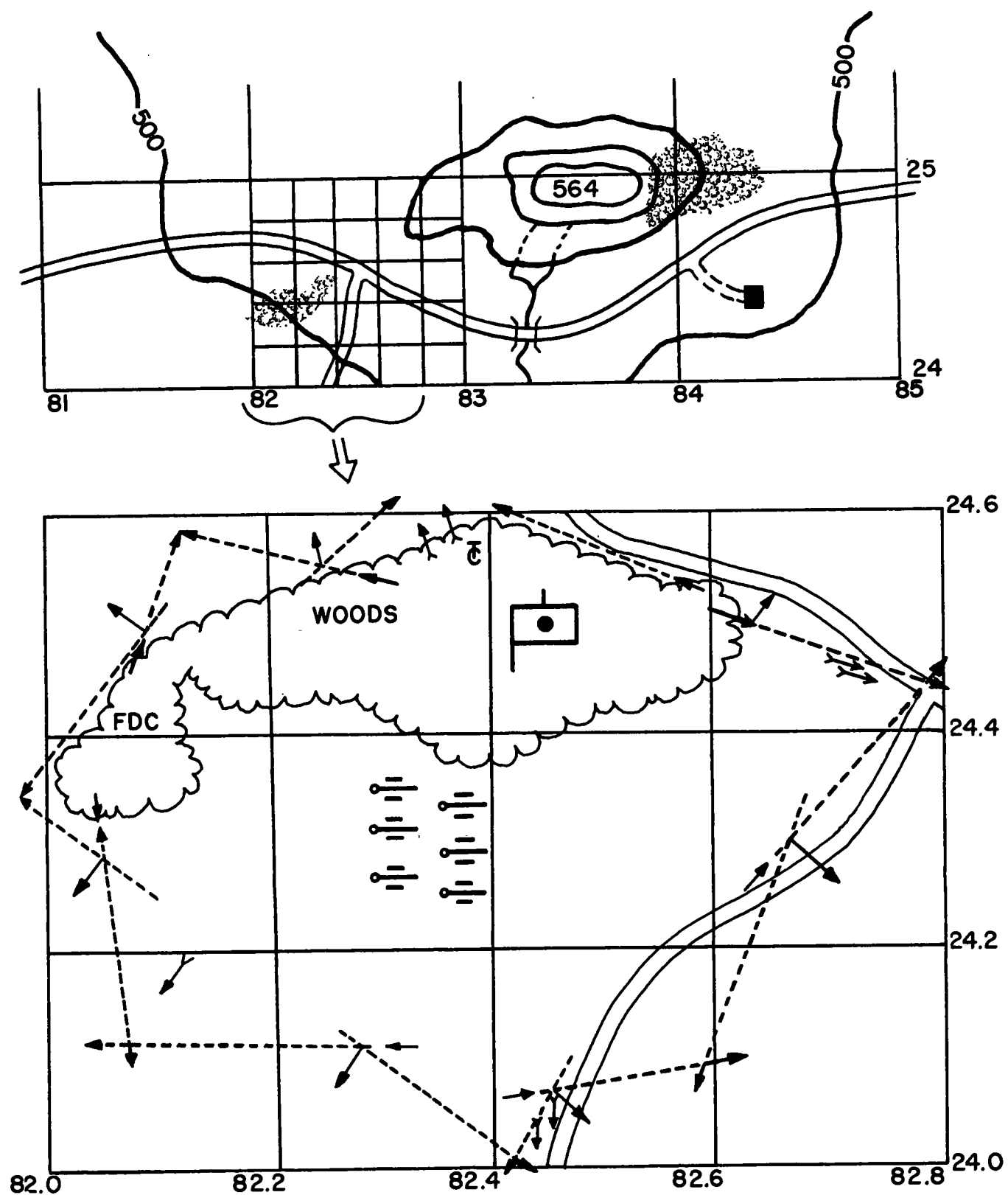


Figure 6-1. Technique of drawing perimeter sketch.

d. The scale of the sketch on the overlay paper is now 1:5,000. Draw in the information required.

6-14. Warning System

An efficient warning system is required for alerting the battery immediately upon the detection of enemy forces or when an attack is expected. Warnings are provided by electronic warning devices, warning systems outposts, listening posts, and patrols; and are transmitted by various means, including pyrotechnics,

horns, whistles, gongs, weapons, and voice. Electronic surveillance devices may be used to augment the security provided by the outposts and listening posts. Provisions should be made for mutual warning among adjacent, supported, and higher units. In order to provide a standard method of disseminating emergency warnings within the NATO forces operating on land, the United States Armed Forces, together with certain other NATO forces, have concurred in the provisions of STANAG 2047, the details of which are contained in appendix C.

Section IV. TYPES OF ATTACKS

6-15. General

A field artillery battery may be subjected to air attacks, artillery or mortar attacks, ground attacks by small infiltrating parties or guerrillas, or ground attacks in strength by exploiting or bypassed forces. The defense against any attack is conducted aggressively. Predetermined defense plans and preparations are modified to fit the situation. The paramount considerations are continuance of the mission of the battery and the protection of the weapons.

6-16. Air Attack

Field artillery battalions and batteries may be subjected to frequent overflights by hostile reconnaissance and observation aircraft on target acquisition and intelligence-gathering missions. In addition, extensive use of tactical aircraft against field artillery units can be expected. The field artillery battery has a limited capability to defend itself against an air attack. Passive means of defense, such as camouflage and dispersion, should be stressed. Aircraft recognition is described in FM 44-30 and should be stressed in unit and individual training. Active defense against air attack is discussed in paragraph 6-33.

6-17. Infiltration

Small bands of infiltrators with a hit-and-run mission may attempt to destroy a small portion of the battery and to cause disclosure of the locations of weapons and installations. Such attacks usually occur at night or during periods of poor visibility and may precede an attack in strength. If the attack is of limited strength and the guncrews are reasonably well protected, personnel should use small arms and grenades, rather than automatic weapons or cannons, to disorganize and repel the attack. The battery security force should not be committed against

such attacks. Field artillery batteries that have been airlanded or helicopter transported are particularly vulnerable to this type of attack.

6-18. Artillery or Mortar Attack

When a battery is subjected to an artillery or mortar attack, every effort must be made to locate the enemy weapons and place them under fire. The battery commander may displace his battery to an alternate position when displacement is considered appropriate by the battalion commander. The battalion FDC should always be notified when the battery is under fire. Shell reports should be prepared and forwarded to the battalion S2. The enemy considers artillery positions prime targets for mortar, artillery, and ground attack.

6-19. Attacks in Strength

Attacks by strong forces may occur at any time. When an attack does occur, the entire battery is alerted and the defenses are fully manned. Outposts remain concealed to observe and report enemy movements and to adjust indirect field artillery fire. When the enemy approaches the position, the outposts open fire to delay and disorganize the attack. Machineguns and other automatic weapons open fire when the enemy is within effective range. Antitank weapons attack enemy tanks, personnel, and crew-served weapons at close range. Personnel who are not engaged in operating a crew-served weapon deliver rifle fire from the main perimeter defense. Cannons not engaged in a fire mission deliver direct fire until the enemy is destroyed or until the fire is no longer effective. To prevent the enemy from overrunning the position, the battery may interrupt a fire mission to deliver direct fire on the attacking enemy. If the enemy closes on the cannon positions, the cannoneers commence small-arms and grenade fire

from the emplacements and from special trenches (FM 5-15). The reaction (security) force is employed to reinforce the threatened area. Aggressive and determined resistance must continue until the attack is repelled. Once close defensive action begins, withdrawal by the

defenders is difficult and costly. *Field artillery units that are prepared for defense will not be overcome unless overwhelmed by a force superior in number or weapons.* After the attack is repelled, the field artillery unit does not pursue the enemy, but continues its primary mission.

Section V. EMPLOYMENT OF WEAPONS

6-20. Small Arms

Personnel must always have their individual weapons with them and ready for use. Ammunition *must* be in clips or magazines, ready for use; however, there should be no round in the chambers of weapons unless the individuals bearing the weapons are on patrol or are alerted against an attack. Distributing points for small-arms ammunition should be set up at frequent intervals along the main defensive line to provide immediate resupply.

6-21. Grenades

a. Hand grenades are effective for close-in defense and are especially effective in repelling a night attack. A number of grenades should be readily available at all defensive positions. The use of fragmentation grenades must be closely controlled to prevent injury to friendly personnel.

b. The grenade launcher M203 (or M79), due to its range capability and accuracy, is effective in the defense of positions. It can be employed against targets that cannot be attacked by other means.

6-22. Machineguns

Machineguns are employed both on the outposts and on the perimeter. Machineguns on the perimeter must be sited to provide covering fire for

the outposts. The sectors of fire from these positions should overlap to provide a continuous belt of flanking grazing fire around the position area. Several positions may be selected for each machinegun-outpost position for normal daylight use, positions on the perimeter for use at night, and positions for use after the withdrawal of the outposts. Defense considerations for employment of machineguns assigned an air defense mission are contained in FM 44-1.

6-23. Antitank Weapons

The antitank weapons available to field artillery units are the lightweight antitank weapon (LAW) and the rocket launcher. These weapons may be used effectively beyond and within the defense perimeter, and as armament for the security force. Antitank weapon positions should not be located more than 200 meters beyond the perimeter. They should be covered by fire of other weapons and should be concealed and well dug in so that the individual or crew may remain in position to deliver fire from close range against the sides of tanks and armored vehicles. Positions for antitank weapons and routes to and from positions must be changed frequently to avoid disclosure of the defensive plan.

Section VI. DEFENSE OF THE FIELD ARTILLERY CANNON BATTERY

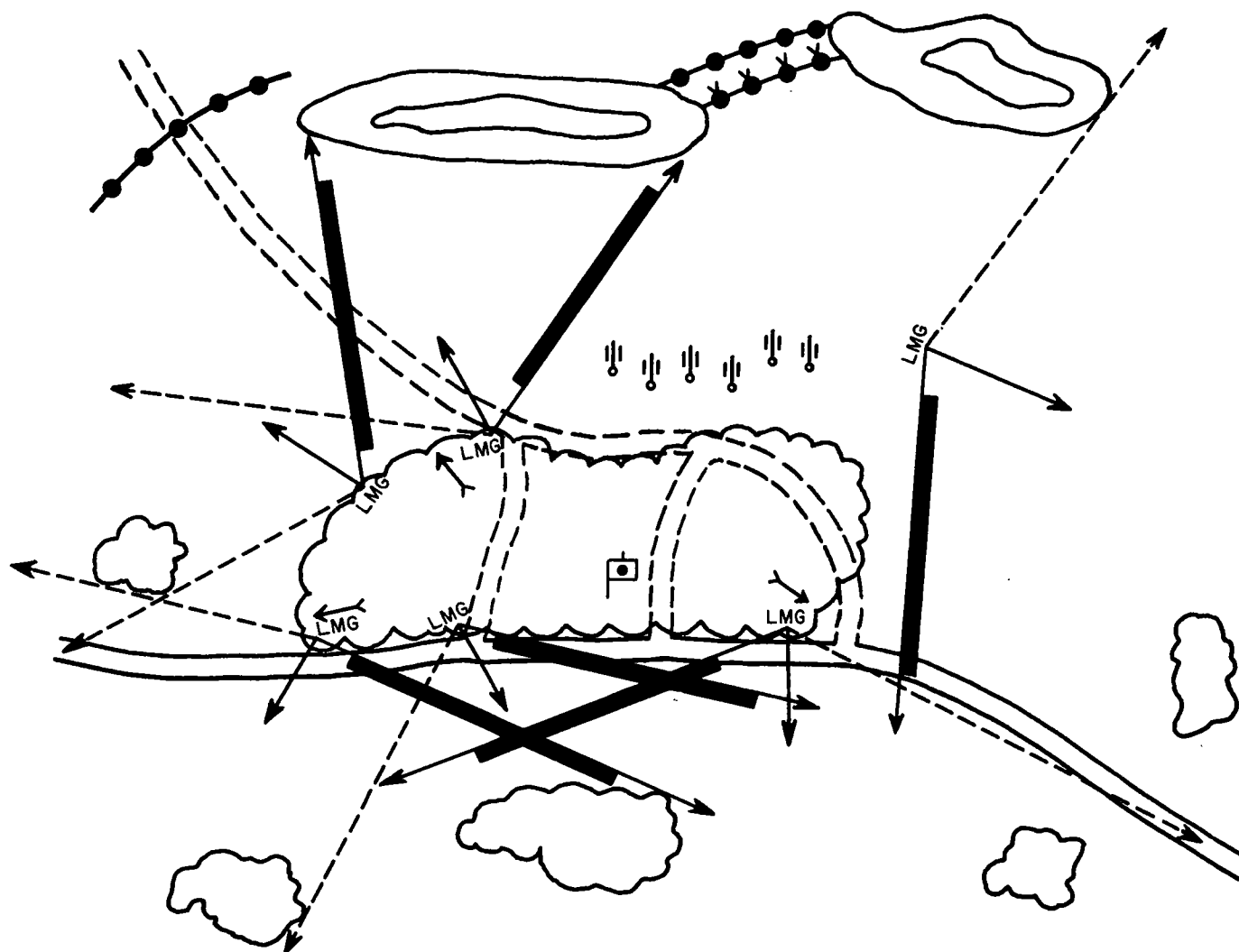
6-24. Organizing for Defense

a. *General.* The emplaced cannons are the nucleus of the battery defense. The firing position should be as compact as possible to provide greater control and security (fig 6-2).

b. *Cannon Emplacements.* The positions for cannon emplacements are selected as stated in paragraph 5-9. The purpose of an emplacement is to provide protection for the piece and the cannoners. The construction of various types of emplacements is illustrated in FM 5-15.

c. *Cover for Personnel.* Preparation of cover

for personnel is begun after the battery is ready to deliver fire and the defenses have been organized. Foxholes or trenches should be available for all personnel at their normal duty positions and on the main perimeter. Priority should be given to preparing protection for personnel to include overhead cover. Cover for cannoners is furnished initially by the cannon emplacement. Foxholes and special trenches are dug adjacent to the emplacement as soon as possible. See FM 5-15 for details concerning the construction of foxholes, special trenches, and bunkers.



NOTE : NOT DRAWN TO SCALE

Figure 6-2. Type battery defense of a firing position.

d. Cover for Ammunition. Initially, ammunition may be placed in small piles raised off the ground by improvised dunnage near the cannons, covered with a double thickness of tarpaulin at least 18 inches from the top, ends, and sides of the pile, and revetted with sandbags to provide temporary protection against enemy action and weather. As time permits, storage pits or trenches, equipped with platforms to hold the ammunition and provided with a means of drainage, should be constructed. These may be improved by the addition of overhead cover. Ammunition storage niches may be cut into the parapet (TM 9-1300-206).

6-25. Employment of Cannons in Direct Fire

a. General. The emplaced cannons deliver direct artillery fire against an attacking force to delay, disorganize, and destroy the force. These fires are integrated into the battery defense plan, and a sector of responsibility is assigned to each firing section (fig 6-3). The sectors overlap to provide all-round coverage. Secondary sectors of fire are assigned to insure continued coverage in the event a cannon is placed out of action. Enemy targets against which direct fire is used are usually those that are capable of returning fire at point blank range. Therefore, the speed and accuracy re-

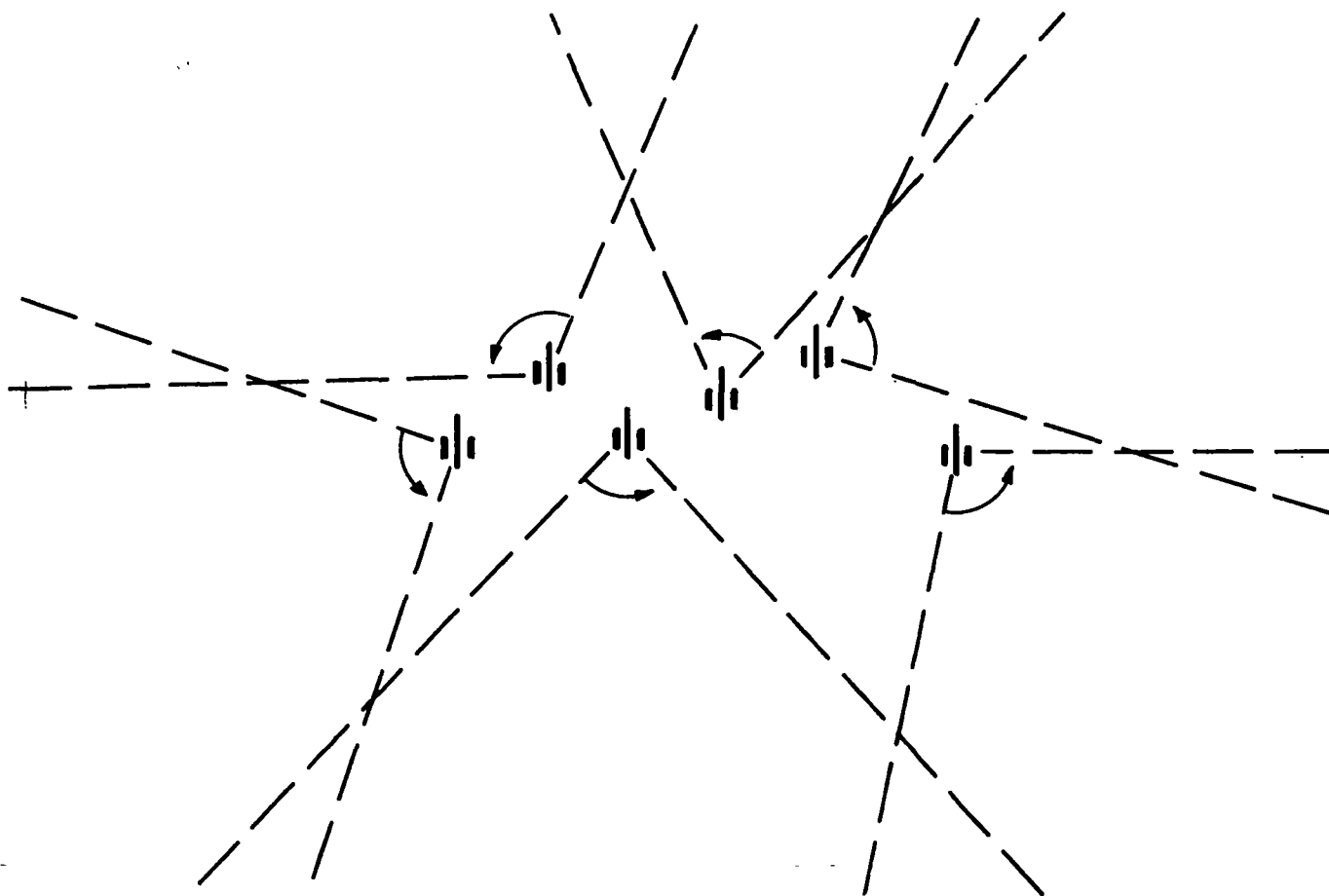


Figure 6-3. Sectors of responsibility of cannons.

quired in direct fire are very important, and should be stressed and drilled.

b. Range Cards. After sectors are assigned, each chief of section prepares a range card for his sector (fig 6-4). The ranges to critical points on all likely avenues of approach, whether within or outside the assigned sector, are indicated on the card. As time permits, a quadrant elevation is added for each recorded range. If there are no prominent terrain features in the sector, stakes may be driven into the ground for use as reference points. As time permits, estimated data on the card are replaced by more accurate data obtained by firing, pacing, tapping, or map measurement. The range card must be readily available, and all men in the section should be familiar with its use. Range cards are also used by gunners of automatic weapons and rocket launchers.

c. Supplementary Positions. Supplementary

positions should be prepared for those pieces unable to deliver effective direct fire from their primary positions. Both primary and supplementary positions should be stocked with ammunition prepared and clearly marked for direct fire missions. Supplementary positions should be selected as near the primary positions as possible to minimize the distance that the piece must be moved.

d. Direct Fire. Direct fire is most effective against armor at a range of 400 meters or less. Foot troops accompanying armor are vulnerable to field artillery direct fire, particularly when the beehive round is used. All firing battery personnel should be familiar with the emergency destruction plans and procedures to prevent capture of beehive rounds. Direct fire is also effective against hovering or slow-moving helicopters. Direct fire sighting systems, fire commands, and methods of observation and adjustment on targets with a vertical profile are

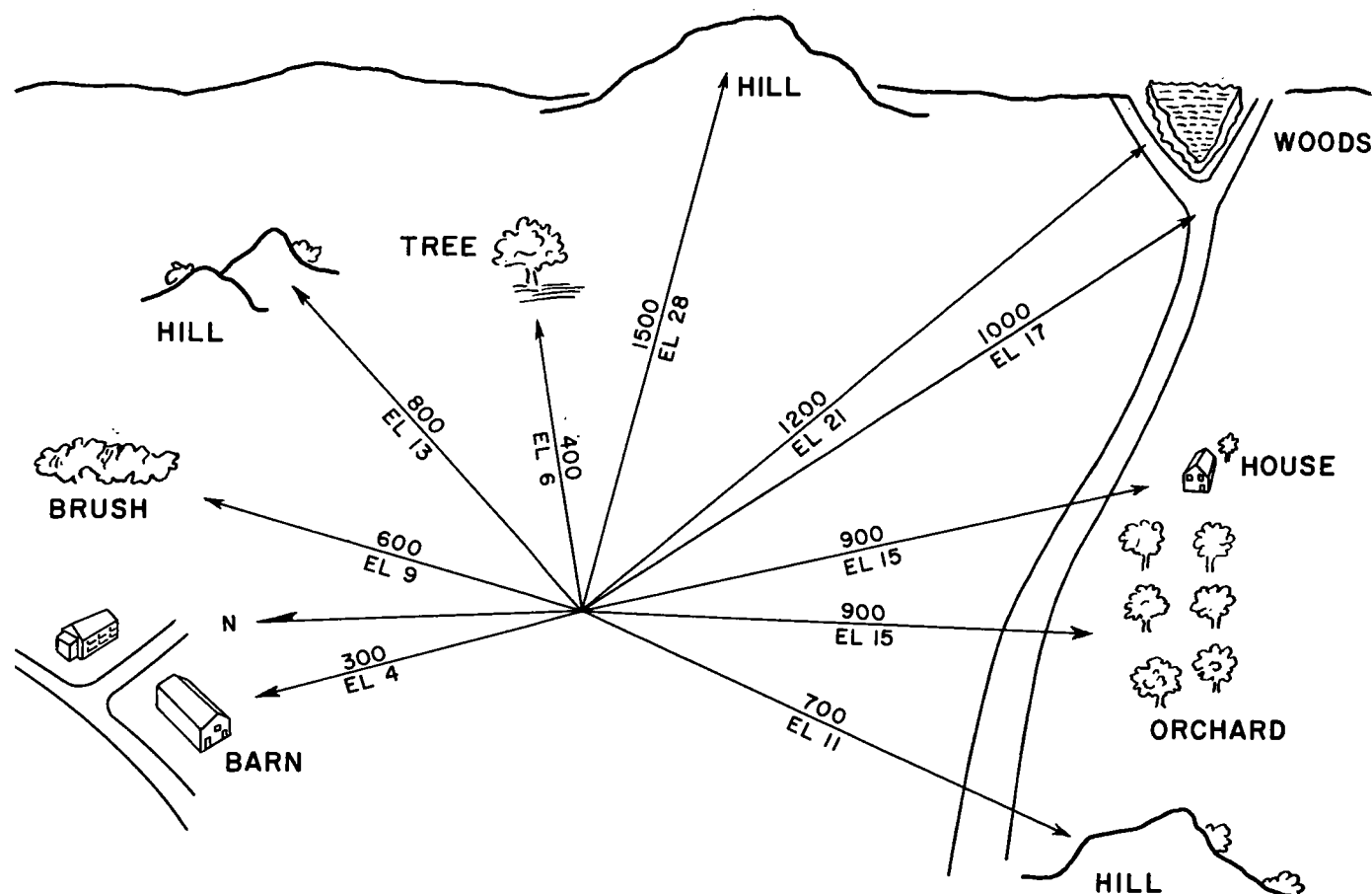


Figure 6-4. Range card for direct fire.

discussed in FM 6-40 and in the appropriate manual for each piece.

e. Heavy Field Artillery. Principles for the defense of heavy field artillery batteries are the same as for light and medium field artillery batteries. The direct fire capabilities of the heavy field artillery battery are limited by the characteristics of the weapon. Automatic weapons and antitank weapons must be used more extensively in defending heavy field artillery units.

6-26. Field Artillery Missile (Rocket) Battery

Field artillery missile (rocket) batteries employ the same general type of defense as cannon batteries. The mission of the missile (rocket) battery makes the battery a high priority target for enemy attack. Generally, the battery is located farther to the rear than most combat support forces, making it more susceptible to attack by airmobile and/or guerrilla forces and by infiltrators.

Section VII. DEFENSE OF THE HEADQUARTERS AND HEADQUARTERS BATTERY AND SERVICE BATTERY ELEMENTS

6-27. General

Field artillery headquarters and headquarters batteries and service batteries employ the same general type of defense as the cannon batteries. The locations of these units frequently permit integration of their defenses with those of adjacent units. However, the echelonment of these units complicates the planning and implementation of their defenses.

6-28. Headquarters and Headquarters Battery

The headquarters and headquarters battery is divided into several installations, including the battalion command post, the aid station, and the headquarters battery area. Security is achieved with organic weapons and personnel by using the defensive characteristics of the

Section III. COORDINATION AND PLANNING OF FIRE SUPPORT

8-11. General

Fire support coordination and the preparation of fire support annexes and field artillery fire support appendixes are discussed in this section.

a. The supported or force commander, through combat orders, policies, priorities, or decisions, employs all fire support available to his command.

b. The senior field artillery officer, or his representative, at each level of command from maneuver battalion through field army is the fire support coordinator (FSCoord) and principal adviser to the commander on fire support matters.

c. At echelons below division, fire support functions are performed at the fire support coordination center (FSCC), an informal agency normally located at the command post of the supported maneuver battalion or brigade. The personnel involved in fire support perform the functions concurrently with their regularly assigned duties.

d. Fire support coordination at division level and above is performed by the FSCoord or his representative in the fire support element (FSE) of the tactical operations center (TOC). For detailed information on fire support coordination, see FM 6-20.

e. The coordination of fire support at company level is the responsibility of the company commander. He may personally perform all actions associated with this responsibility, or he may designate an individual to act in his behalf. The company mortar platoon leader, the forward observer from the direct support field artillery unit, the rifle platoon leaders, the battalion mortar forward observers, and the senior representative of other fire support means advise the company commander during planning, coordination, and employment of these fires.

f. The United States Armed Forces have ratified the Details of Agreement of STANAG 2099, and CENTO STANAG 2099, Fire Coordination in Support of Land Forces. When US forces operate with NATO and CENTO Armed Forces, the instructions given in STANAG 2099 will be followed. The complete details of agreement and instructions of STANAG 2099 are contained in FM 6-20.

g. The United States Army has ratified the Details of Agreement of STANAG 2082, Relief of Combat Troops. When US Army Forces operate with NATO Armed Forces, the instructions

given in STANAG 2082 will be followed. The complete details of agreement and instructions of STANAG 2082 are contained in FM 6-20.

h. The United States Armed Forces have ratified the Details of Agreement of STANAG 2104, Friendly Nuclear Strike Warning to Armed Forces Operating on land. When US Armed Forces operate with NATO Armed Forces, the instructions in STANAG 2104 will be followed. The complete details of agreement and instructions of STANAG 2104 are contained in FM 6-20.

i. The United States Armed Forces have ratified the Details of Agreement of STANAG 2029, Method of Describing Ground Locations, Areas and Boundaries. When US Armed Forces operate with NATO and SEASTAG Armed Forces, the instructions in STANAG 2029 will be followed. The complete details of agreement and instructions of STANAG 2029 are contained in FM 6-121 and FM 61-100.

8-12. Fire Support Planning

a. Upon receipt of orders, the force commander announces his mission and planning guidance to his staff and commanders. His guidance and general plan for the employment of available fire support, to include special weapons, are included in the planning guidance.

b. The force fire support annex is based on the fire support portion of the commander's concept of operation. The fire support annex is the announcement of the commander's decision concerning the employment of the fire support means (artillery, air, naval gunfire) that are available to, or that are in support of, the force. The fire support annex may or may not be a formal written document. At company level, the plan of fire support is often issued orally or in written fragmentary form.

c. When written, the plan of fire support, with the plans of fire for appropriate fire support agencies as appendixes, becomes an annex to the operation order and is disseminated to subordinate units.

d. The FSCoord at each echelon is responsible for the preparation of the fire support plan. The procedures for developing this plan are generally as follows:

(1) The fire support coordinator, or his representative, develops a tentative plan to fulfill the fire support requirements set forth in

the commander's concept of operation. He coordinates with the force S3 to obtain any additional fire support necessary, and with the force S3 air or airspace control element for field artillery use of airspace.

(2) After approval by the force commander, the tentative plan becomes the fire support annex. The portions of the plan applying to specific fire support means—such as field artillery, air, and naval gunfire—are used in developing the plan for that particular fire support agency.

8-13. Fire Planning

a. Plans of fire, which are prepared to implement the plan of fire support, are relatively detailed showing how each type of fire support will be provided. They are tactical plans for using the available fire support weapons. Plans of fires to be executed by the field artillery are known as field artillery fire support appendixes, regardless of the echelon at which they are prepared. This appendix may have four parts—a target overlay, a target list, a written portion which includes information and requests for additional fires, and one or more fire plan tables.

b. Those parts of a field artillery fire support appendix that are not needed at a particular echelon may be omitted. For example, a plan of field artillery fires prepared by a forward observer is a target list which includes the target designation (assigned by the fire support (liaison) officer with the battalion or task force), the target description, the grid, and a remarks column. The target list may also include the altitude, size, and attitude of the target, and the source or accuracy of the information concerning the location of the target (optional).

c. Before beginning his fire planning, the field artillery forward observer must know the mission and tactical plan of the supported unit, the supported commander's plan for the use of fire support, and the requirements of the force for fire support relayed to him by the FDC or the maneuver battalion fire support (liaison) officer.

d. The artillery forward observer plans fires on targets and potential targets to support the supported unit in accomplishing its mission. Targets are selected by various means such as

the forward observer's own observation, map inspection, known enemy tactics, and the desires of the supported unit commander. Fires may be planned on targets outside the supported unit's boundaries. However, these targets will not be fired without coordination with the adjacent units unless the targets are on the enemy (forward) side of the no-fire line.

e. The detail with which target lists are prepared by forward observers depends on the time available, the extent and accuracy of target locations, the type of operation in which the force is engaged, and the requirements of the supported commander.

f. Target lists of planned targets are sent by the forward observers to the field artillery battalion fire support (liaison) officer at the supported battalion for coordination and consolidation and for addition of other fires, as necessary. The battalion fire support (liaison) officer sends the coordinated lists of targets for field artillery fires to the direct support battalion fire direction center, and to the brigade fire support coordination center (FSCC) for clearance and possible substitution for other means of fire support.

g. The FDC consolidates and coordinates field artillery targets as necessary, adds fires desired by the force commander and his staff, and develops the plan of field artillery fires for the force. A copy of the field artillery fire support appendix is forwarded to the division artillery fire direction center through field artillery channels.

h. The forward observers are informed of any action taken on their target lists submitted to higher artillery echelons. For example, target designations near boundaries may be changed to coincide with plans of adjacent units, or fires desired by the force commander may be added to the plan. The forward observer informs the supported company (troop) commander of any changes.

i. When a field artillery unit is assigned a tactical mission of reinforcing another unit, its fires are planned by the reinforced unit unless otherwise specified. Normally, the fires of a field artillery unit with the mission of general support-reinforcing are planned by the force artillery headquarters unless otherwise directed.

CHAPTER 10

TRAINING

Section I. GENERAL

10-1. Objective of Training

The ultimate objective of all military training is success in combat. This can be accomplished if the following five basic objectives of military training are achieved:

a. Military Discipline. It is essential that all soldiers recognize and respect authority and give unhesitating obedience to that authority. Training in this discipline is continuous and its principles are applied in every military activity.

b. Health, Strength, and Endurance. This objective is essential for soldiers to withstand the rigors and hardships of combat. These physical characteristics, coupled with military discipline, are the foundation for a well-trained force.

c. Technical Proficiency. The individual soldier must have sufficient knowledge and achieve the necessary skills to perform his assigned duties. He must be able to use and maintain the weapons, equipment, and materiel

for which he is responsible in accomplishing his part of the mission.

d. Teamwork. Each soldier must be taught to coordinate his efforts and technical proficiency with other team members and to operate as a part of that team.

e. Tactical Proficiency. Tactical proficiency is the ultimate goal of all military training. It is the ability of the unit to operate effectively in combat to accomplish the mission.

10-2. Basic Concepts of Training

All military training is based on the following concepts:

a. The dignity of the individual must not be violated.

b. Most men can be trained to be efficient soldiers if the training is carefully planned, conducted, and supervised.

c. Applicatory instruction best suits the needs of military training.

d. Responsibility for the conduct of training is vested in the unit commander.

Section II. TRAINING MANAGEMENT

10-3. General

a. The commander's responsibility for training includes direction and assistance to the officer personnel assigned to his unit. He increases their experience by varying their duty assignments. He encourages them to further their military education by attending service and unit and installation schools, and by individual study and improvement.

b. The commander gives his noncommissioned officers responsibilities commensurate with their demonstrated abilities and appropriate to their grades. He develops them as leaders by requiring them to exercise their abilities. The commander uses troop and service schools to instruct and train noncommissioned officers in their duties and to prepare them for higher positions of authority and responsibility.

10-4. Phases of Training

a. The five formal phases of training are basic combat training, advanced individual training, basic unit training, advanced unit training, and field exercise training. One phase of training may overlap other phases. The phases of training usually conducted in a field artillery battery are advanced individual training and basic unit training.

(1) Advanced individual training teaches the basically trained soldier his occupational skills as a field artilleryman, preparing him for specific functions as a member of a field artillery team. Formal training in this phase does not take a large portion of the annual training time of the battery; informal training of this type continues throughout the career of the soldier.

(2) Basic unit training teaches and promotes teamwork and allows the soldier to practice the skills that he acquired in advanced individual training. Basic unit training integrates the soldiers into an efficient, smooth-working section and battery.

b. Advanced unit training, in which the battery trains as an element of a larger organization, such as the artillery battalion, is usually conducted by, or under the supervision of, the higher headquarters.

Section III. TRAINING PROGRAMS AND TESTS

10-6. Army Training Program

The Army training program (ATP) is designed as a guide for the preparation of training programs and schedules during the phases of military training. Each ATP is supported by an Army subject schedule.

10-7. Army Training Test

The Army training test (ATT) is designed to assist commanders at all levels in evaluating the training progress and in providing a basis for direction of the training effort. Army training tests are divided into two general categories—tests designed to measure the proficiency of the individual, and tests designed to measure the operational (tactical) proficiency of either a small or a large unit (battery or battalion).

10-8. Methods of Instruction

Training is guided by the provisions of FM 21-6. Instructors appointed or selected by the battalion or battery commander must be thoroughly familiar with FM 21-6 to present instruction properly and effectively.

10-9. Training Time

a. AR 350-1 is the authority for establishing training activities.

b. Time designated as commander's time should be used to provide latitude in the administration and scheduling of training. It may be used to compensate for interruptions, to bring individuals up to desired standards, or to introduce special training which is not provided for in the ATP but is appropriate to the local training situation.

c. Compensatory time is scheduled to provide for the needed rest of the troops, maintenance of individual equipment, and various administrative requirements. Commanders are authorized to grant compensatory time when deemed neces-

10-5. On-the-Job Training

On-the-job training (OJT) is a method used to train individuals or small numbers of personnel (normally in a specialized MOS) or to maintain proficiency. It is particularly applicable to the training of staff personnel, battery overhead personnel, mechanics, cooks, repairmen, and cadres. It may be used to further develop skills learned in other training.

sary to the welfare or morale of the battalion or battery. For example, a unit which excels in the performance of a training activity or a unit which has maintained an exceedingly high disciplinary record for an extended period of time may be granted time off in compensation for this type of performance.

10-10. Physical Fitness

a. All military personnel must develop and maintain the level of physical fitness required for field or combat duty. The commander is responsible for insuring that this objective is met.

b. Criteria for training and testing for physical fitness are contained in FM 21-20 and DA Pam 21-1.

10-11. Responsibilities of Commanders

a. Administrative and tactical responsibilities of commanders are contained in AR 600-20.

b. The development of leaders is a major function of military training. Leadership potential must be developed and exploited in all phases of training.

10-12. Maintenance and Supply Economy

a. By constant and active supervision and training, commanders insure that the most economical use is made of available manpower, money, and materiel resources. Training should stress that economy is a result of proper supply management and use of supply procedures.

b. Maintenance extends to all military equipment. Definite standards should be established and definite requirements should be placed on each individual for the care of equipment, and

should be followed up by a thorough and timely system of inspection.

c. Periods devoted to maintenance of individual and unit equipment should be shown on the unit training schedule.

10-13. Safety and Realism

The firing of all types of ammunition and weapons is governed by AR 385-63 and appropriate training publications for particular weapons.

Section IV. GUIDANCE AND PLANNING

10-14. DA Training Publications

The Department of the Army publishes and distributes training literature in various forms to guide and assist commanders in developing and executing effective procedures in training management. These publications pertain to *doctrine, tactics, techniques, and procedures* adopted for use in training individuals and units of the Army. In addition to Army regulations, and Army training programs and Army training tests (para 10-6—10-13), commanders should use the following training publications:

a. *Army Subject Schedules*. Army subject schedules are published by DA to support Army training programs and are used throughout the US Army. The schedules are prepared and published to insure maximum uniformity in the conduct of MOS training and training in subject areas. They contain detailed instructions and lesson outlines that provide assistance to instructors in the preparation and conduct of training.

b. *Field Manuals*. Field manuals are used to provide and express military doctrine, tactics, and techniques. They contain instructional, informational, and reference material relative to military training and operations.

c. *Training Circulars*. Training circulars are used to quickly disseminate to the field new training policies, doctrine, tactics, and techniques. This information is later included in more permanent training literature.

d. *DA Pamphlets*. DA pamphlets normally are not directive in nature. They are used to

publish training information and to indicate the status of training publications.

10-15. Training Program

The training program outlines the general plan for the conduct of training for the entire unit for specified periods of time. The scope of the program depends on the size of the unit and its overall training mission. In general, the program amplifies the directives received from higher headquarters. It is prepared in a form that insures understanding by subordinate units.

10-16. Master Training Schedule

The master training schedule is that part of the training program which is designed to guide subordinate commanders in preparing their weekly training schedules. The master schedule specifies the subjects to be taught and the number of hours for each subject, and outlines the general sequence of instruction.

10-17. Weekly Training Schedule

The unit weekly training schedule is developed from the master training schedule. In general, the weekly training schedule includes two types of information—that which the instructors need to prepare and present the prescribed subjects, and that which the personnel to be trained need to enable them to be present at the designated place of instruction at the proper time with the proper equipment.



11



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By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General, United States Army
The Adjutant General

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